

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF VIRGINIA  
ALEXANDRIA DIVISION

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UNITED STATES, et al., : Civil Action No.:  
: 1:23-cv-108  
Plaintiffs, :  
versus : Thursday, September 26, 2024  
: Alexandria, Virginia  
GOOGLE LLC, : Day 14 a.m.  
: Pages 1-177  
Defendant. :  
-----x

The above-entitled bench trial was heard before the  
Honorable Leonie M. Brinkema, United States District Judge.  
This proceeding commenced at 9:03 a.m.

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P R O C E E D I N G S

THE DEPUTY CLERK: Civil Action Number  
1:23-cv-108, United States of America, et al. versus Google  
LLC.

Will counsel please note their appearance for the  
record, first for the plaintiffs.

MR. HARRISON: Good morning, Your Honor. Jonathan  
Harrison from Virginia on behalf of the states. With me  
today is Brooke Lovrovich from the Washington Attorney  
General's Office.

THE COURT: Good morning.

MS. WOOD: Good morning, Your Honor. Julia Tarver  
Wood from the Department of Justice on behalf of the United  
States. With me are my colleagues Aaron Teitelbaum.

MR. TEITELBAUM: Good morning, Your Honor.

THE COURT: Good morning.

MS. WOOD: Michael Wolin, Craig Briskin and  
Alvin Chu.

THE COURT: Good morning.

MS. WOOD: And Mr. Mene from the U.S. Attorney's  
Office is here as well.

THE COURT: Yes.

MS. DUNN: Good morning, Your Honor. Karen Dunn  
for Google. With me today are Martha Goodman, Bryon Becker,  
Tina Sessions, Craig Reilly, Bill Isaacson, Jeannie Rhee and

1 Matt Spalding.

2 THE COURT: Good morning.

3 MS. DUNN: Good morning.

4 THE COURT: All right. Are we ready to proceed?

5 MS. DUNN: Yes, Your Honor.

6 Google --

7 THE COURT: In terms of the administrative  
8 matters, we've reviewed the various depositions, the Farber,  
9 Glogovsky, Pauley and Whitcombe, and I'm letting everything  
10 in. All right.

11 MS. DUNN: Yes, Your Honor.

12 THE COURT: Good for the goose; good for the  
13 gander. You've done so well in shortening the case, we  
14 might as well get all of that in; all right?

15 MS. DUNN: Understood, Your Honor. Thank you.

16 Your Honor, Google calls Jessica Mok.

17 THE COURT: All right.

18 THE COURT SECURITY OFFICER: Ma'am, come forward.  
19 Face the deputy clerk. Raise your right hand.

20 Thereupon,

21 JESSICA MOK,  
22 having been called as a witness on behalf of the defendant  
23 and having been first duly sworn by the Deputy Clerk, was  
24 examined and testified as follows:

25 (Time noted: 9:03 a.m.)

1 THE DEPUTY CLERK: Thank you.

2 THE COURT SECURITY OFFICER: You may be seated.

3 MS. GOODMAN: May I proceed?

4 THE COURT: Yes, ma'am.

5 DIRECT EXAMINATION

6 BY MS. GOODMAN:

7 Q Good morning. Please introduce yourself and spell your  
8 name for the court reporter.

9 A Jessica Mok, J-E-S-S-I-C-A. M-O-K.

10 Q Where do you work, Ms. Mok?

11 A Google.

12 Q What is your current position at Google?

13 A Finance director.

14 Q And what business do you work in currently?

15 A Currently, I'm a finance lead for Google Maps.

16 Q And did you previously work in a finance role for the  
17 Google DVAA business?

18 A Yes.

19 Q And what time period?

20 A January 2017 to August 2023.

21 Q And what does DVAA stand for?

22 A Display, video, apps and analytics. It's the part of  
23 the business focused on ad monetization of third-party  
24 publisher and exchange inventory.

25 Q And was it also known for a period of time as AVAD?



1 A Yes.

2 Q And what does AVAD stand for?

3 A Apps, video and display.

4 Q And are you an accountant?

5 A No.

6 Q Okay. What role did you have during your -- the time  
7 you worked in finance for the DVAA business?

8 A The job titles?

9 Q Yes.

10 A When I started, finance manager, then senior finance  
11 manager, and then finance director.

12 Q And in those finance roles, can you describe for the  
13 Court at a high level your responsibilities?

14 A I thought of my role as finance partner to be a  
15 strategic advisor to the business leader. So I would think  
16 about two key things. One is making sure that the business  
17 leaders were well informed about the financial performance  
18 of their business. And then the second thing, as they were  
19 making business decisions, making sure that my team was  
20 working with them to model out the financial impact of those  
21 decisions they were considering.

22 Q Okay. And when you were in the DVAA business, was part  
23 of your responsibilities to prepare profit and loss  
24 statements?

25 A Yes.

1 Q At what level of granularity were the P&Ls constructed  
2 during your time period in that business?

3 A It evolved. Over the time period I was working on the  
4 business, we were constantly iterating on the P&Ls, trying  
5 to make them more accurate, more insightful.

6 So in the beginning part of my tenure, we were  
7 really focused on what's the aggregate display P&L for the  
8 overall business. And then once we got comfortable with  
9 that, we started to break the P&L down into smaller  
10 components. We called them product P&Ls. And then we, over  
11 time, evolved the definition of the product hierarchy we  
12 were using in the P&Ls.

13 Q Okay. And I'm going to direct your attention to  
14 DTX 1508.

15 MS. GOODMAN: Which is in evidence, Your Honor.

16 THE COURT: All right.

17 BY MS. GOODMAN:

18 Q And do you recognize these slides?

19 A Yes.

20 Q What are they?

21 A Slides we put together for business leaders to  
22 understand the display P&L and the financials.

23 MS. GARCIA: And, Mr. Spalding, could you turn to  
24 page 8, please.

25 BY MS. GOODMAN:

1 Q And at the top here in the beautiful rainbow colors,  
2 what's represented there?

3 A These were the products that were included in the  
4 display P&L.

5 Q Okay. And so AdMob, AdSense, Ad Manager, Google Ads,  
6 DV360, and CM360; is that right?

7 A Yes. Although, I think it's important to clarify that  
8 DV360 and Google Ads can buy broadly across inventories. So  
9 they can buy things like search and YouTube inventory. The  
10 display P&L only included the portion of ad buying on Google  
11 Ads and DV360 that was on the inventories on the bottom.

12 MS. GOODMAN: Okay. And let's turn to page 12.

13 BY MS. GOODMAN:

14 Q What is this slide depicting?

15 A This was showing -- I mentioned earlier that over time  
16 we evolved our definition of the product hierarchy in our  
17 product P&Ls, so this shows what we were shifting from and  
18 to. So the top blue part were the old definition of product  
19 P&Ls, and then the green part shows standalone P&Ls that we  
20 moved to.

21 Q And by what time was that shift to standalone product  
22 P&Ls completed?

23 A I think this was in 2021. We got to standalone product  
24 P&Ls, and our practice was generally to try and recast at  
25 least one trailing year in the same hierarchy so we had

1 comparable year on year.

2 Q And to what extent did breaking the aggregate P&L into  
3 product-level P&Ls reflect how these products competed in  
4 the overall ad tech ecosystem?

5 A Not at all. We made the shift in product P&Ls to try  
6 and drive more insight and tie it better to how we were  
7 internally organized where there was a clear business leader  
8 for each of these green boxes.

9 MS. GOODMAN: Okay. You can take that down,  
10 Mr. Spalding. And please put up DTX 510. This is not yet  
11 in evidence.

12 THE COURT: Any objection to 510?

13 MR. WOLIN: No objection.

14 THE COURT: All right. It's in.

15 (Defense Exhibit Number 510 admitted into evidence.)

16 BY MS. GOODMAN:

17 Q And directing your attention to the tab at the bottom,  
18 DVAA annual, what does this sheet in this spreadsheet  
19 represent?

20 A This is the December 2018 P&L forecast.

21 Q Okay. And does this reflect actuals for years prior?

22 A Yes.

23 Q For '15, '16 and '17?

24 A Yes.

25 Q Okay. And directing your attention to the blue box at

1 the top in Row 9, core DVAA, what does that represent?

2 A Core DVAA is the products included on the P&L which  
3 were on that slide with the rainbow-colored boxes.

4 Q And directing your attention to Row 29, booked revenue,  
5 what does that represent?

6 A Booked revenue is in our accounting systems the amount  
7 of revenue that we recognize as belonging to this part of  
8 the business.

9 Q Okay. Does booked revenue include only revenue  
10 received in connection with display or banner ads served on  
11 third-party websites?

12 A No. There's a big portion of revenue that comes from  
13 ads on apps and video.

14 Q And directing your attention to Row 77, operating  
15 profit, what does that represent?

16 A Operating profit is revenue minus cost to sales in  
17 Opex. So the amount that Google keeps after investing to  
18 drive those revenues.

19 Q And just at a high level, can you describe the kinds of  
20 expenses that are subtracted from revenue in order to obtain  
21 the operating profit number?

22 A So in cost to sales, the two big items are traffic  
23 acquisition cost. The revenue share we pay out to  
24 publishers. And machine and network costs, which serve our  
25 ad tech infrastructure. And then the other line items,

1 engineering and product management costs, our salespeople,  
2 general administrative to support the people working on the  
3 business.

4 Q And we see the row operating profit percentage.

5 What does that represent?

6 A Profit divided by booked revenue.

7 Q Okay. And according to this P&L, what was DVAA's  
8 operating profit in 2015?

9 A We had an operating loss. So negative 126 million.

10 Q And what was the operating profit in 2016?

11 A Operating loss of 784 million.

12 Q And what was the operating profit in 2017?

13 A Another operating loss. So negative 67 million.

14 MS. GOODMAN: Mr. Spalding, can you please put up  
15 DTX 856.

16 THE COURT: Are you moving that in?

17 MS. GOODMAN: Yes, ma'am.

18 THE COURT: Any objection?

19 MR. WOLIN: No objection.

20 THE COURT: All right. It's in.

21 (Defense Exhibit Number 856 admitted into evidence.)

22 BY MS. GOODMAN:

23 Q And directing your attention here to the DVAA  
24 management tab.

25 What does this tab represent?

1 A This is the November 2020 P&L forecast.

2 Q And does it include actuals for '18 and '19?

3 A Yes.

4 Q And what was Google's operating profit margin in 2018?

5 MS. GOODMAN: Mr. Spalding, if you could scroll  
6 down.

7 THE WITNESS: Could you scroll?

8 In 2018, 649 million of operating profit.

9 BY MS. GOODMAN:

10 Q And as a percentage, what was the operating profit?

11 A 3.9 percent.

12 Q And in 2019, what was the operating profit and the  
13 operating profit percentage?

14 A 1.2 billion of operating profit, and 6.6 percent.

15 Q And in these years, what do you recall being the driver  
16 of operating profit?

17 A Apps. App ads revenue was strong in driving profit  
18 across the business.

19 MS. GOODMAN: Okay. Mr. Spalding, can you please  
20 put up Mok Demonstrative 1.

21 BY MS. GOODMAN:

22 Q And does this demonstrative accurately reflect the  
23 numbers that we just went over from 2015 through 2019?

24 A Yes.

25 Q Okay. And so we've looked at the P&Ls for '15 through

1 '19.

2 Did you refine the methodologies for preparing  
3 P&Ls over this time period?

4 A Yes.

5 Q Okay. And did those changes that you made cause  
6 numbers for those years to be inaccurate once you made the  
7 changes for future years?

8 MR. WOLIN: Objection. Leading.

9 THE COURT: Sustained.

10 BY MS. GOODMAN:

11 Q How, if at all, did the changes that you made to the  
12 P&L methodology cause inaccuracies in prior year P&Ls?

13 A So generally we were constantly trying to make the P&Ls  
14 more accurate and more insightful. I think that -- and so  
15 generally, the time periods closer to now are more accurate  
16 than the ones that were more distant in the past.

17 I -- on this demonstrative, I think 2015, '16 are  
18 not particularly accurate. I have more confidence in the  
19 2018 and 2019 numbers.

20 So one notable thing that happened around 2016 to  
21 2017, we, at a Google level, had the first corporate  
22 allocation engine. So the numbers in 2015 and '16 most  
23 likely aren't fully cost loaded, and then the ones after  
24 that are.

25 Q And by the numbers in '15 and '16 not being fully cost



1 loaded, does that cause, in your opinion -- does that mean  
2 the numbers are overstated or understated?

3 A I think the profit numbers are most likely -- the  
4 profit numbers are most likely overstated because there  
5 aren't enough costs represented in the P&L.

6 MS. GOODMAN: Okay. And we can take that  
7 demonstrative down, Mr. Spalding.

8 And I'm going to put up DTX 512, but this is a P&L  
9 that we would ask to be submitted under seal because it  
10 reflects more recent years.

11 And I believe there's no objection to that from  
12 the government.

13 THE COURT: But you're moving it in?

14 MS. GOODMAN: Yes, ma'am.

15 MR. WOLIN: No objection, Your Honor.

16 THE COURT: All right. So 512 is in under seal.  
17 And there's no redacted -- obviously no redacted version of  
18 that?

19 MS. GOODMAN: That's correct. We can't redact the  
20 spreadsheet.

21 THE COURT: All right.

22 (Defense Exhibit Number 512 (under seal) admitted into  
23 evidence.)

24 MS. GOODMAN: So, Mr. Spalding, can we please put  
25 up 512 for just the witness, the Court and the parties.

1 BY MS. GOODMAN:

2 Q And, Ms. Mok, what is DTX 512?

3 A This is a later P&L file. This view that we're looking  
4 at is the 2020 actuals for the display P&L.

5 Q And is this P&L broken out by product?

6 A Yes.

7 MS. GOODMAN: Okay. And, Mr. Spalding, if you  
8 toggle in the top left corner and show Ms. Mok the drop-down  
9 menu.

10 BY MS. GOODMAN:

11 Q Does this include actuals for '21 and '22?

12 A I believe so.

13 MS. GOODMAN: Mr. Spalding, if you go to '22, and  
14 then version actuals.

15 BY MS. GOODMAN:

16 Q Do you see that Ms. Mok?

17 A Yes. 2022 actuals.

18 MS. GOODMAN: And let's go to 2023, and Version 8.

19 BY MS. GOODMAN:

20 Q And what does this view of the spreadsheet reflect,  
21 Ms. Mok?

22 A Our August 2023 forecast for full year 2023 P&L.

23 MS. GOODMAN: Okay. And given the complexity of  
24 this particular spreadsheet, we're going to put up Mok  
25 Demonstrative 2. This should also be just for the Court,

1 parties and the witness.

2 BY MS. GOODMAN:

3 Q And, Ms. Mok, does this demonstrative reflect Google's  
4 operating profits on a product-level basis for 2020, '21,  
5 '22 and 2023 through August, as we just saw on the prior  
6 spreadsheet?

7 A Yes.

8 Q And what amount of profits in these years are  
9 attributable to ads served on apps?

10 A It varies by year, but looking across all four periods,  
11 generally 50 percent or more.

12 Q And how can you tell that?

13 A So AdMob column is -- AdMob is all app ads, and if I  
14 pick, for example, 2023, AdMob alone is 50 percent of total  
15 display profits. Google Ad Manager also has a material  
16 portion of revenue and profit coming from apps. And so if  
17 you -- if AdMob alone is half the profits and then you add  
18 in whatever the contribution is coming from the apps portion  
19 of Google Ad Manager, it must be more than half of -- app  
20 ads must be driving at least half of display's total profit.

21 Q And what portion of display's total profit is driven by  
22 AdSense?

23 A It looks like about 15 percent.

24 Q And what, if anything, explains the profit numbers we  
25 see in this slide on 2021 being higher than in other years?

1 A So in the COVID time period, it was a period of a lot  
2 of strength for ads revenue. If you think about users being  
3 at home, being on their computers, watching content online,  
4 they were consuming a lot of digital ads, and we saw all  
5 that flow through to our financials.

6 MS. GOODMAN: No further questions for the witness  
7 at this time. Thank you.

8 THE COURT: All right.

9 MR. WOLIN: May I proceed?

10 THE COURT: Yeah. Go ahead.

11 CROSS-EXAMINATION

12 BY MR. WOLIN:

13 Q Good morning, Ms. Mok. My name is Michael Wolin. I'm  
14 going to ask you a couple questions on behalf of the  
15 plaintiffs.

16 The financial numbers you just were testifying  
17 about all come from Google's regularly created P&Ls; is that  
18 correct?

19 A Yes.

20 Q And if you could take a look at your first  
21 demonstrative, Mok Number 1, in your binder.

22 MR. WOLIN: I'll ask Mr. Klein to put that up on  
23 the screen.

24 THE WITNESS: Yes.

25 BY MR. WOLIN:

1 Q And you testified about what DVAA means.

2 But, to be clear, DVAA includes both DFP, AdX, GDN  
3 and other products; correct?

4 A Yes.

5 Q And I believe you also said DVAA includes video ads,  
6 app ads and display ads, and those are all included in the  
7 DVAA revenues; correct?

8 A Yes, when they're served on AdMob, AdSense, Ad Manager  
9 or third-party exchange inventory.

10 Q And you would agree with me that the years 2018 and  
11 2019 were profitable as shown on this demonstrative;  
12 correct?

13 A Yes, they were profitable.

14 Q And it's over \$1.2 billion in profits in 2019; correct?

15 A Yes.

16 Q So let's put up -- or take a look at your second slide  
17 in the binder.

18 Without referring to the numbers, but you would  
19 agree that Google Ad Manager was profitable in 2020, 2021,  
20 2022 and 2023 through August; correct?

21 A I think so, yes.

22 Q And Google Ad Manager includes both DFP and AdX;  
23 correct?

24 A Yes.

25 Q And we also see on this slide that Google, in the

1 normal course of business, created separate P&Ls for DV360  
2 and separate from Google Ads; correct?

3 MS. GOODMAN: Your Honor, the witness doesn't have  
4 on the screen the unredacted version, so I just want to make  
5 sure she could have that on the screen if she doesn't have  
6 it in front of her.

7 MR. WOLIN: Do you have it in your binder,  
8 Ms. Mok?

9 THE COURT: The safest thing might be to look at  
10 the binder. So if you look at the Google binder. Or do you  
11 have it in yours as well?

12 MR. WOLIN: It's the black binder, Ms. Mok.  
13 Sorry. The tab that's labeled Mok Demonstrative 2.

14 THE WITNESS: Okay.

15 MR. WOLIN: Let me restate my question.

16 BY MR. WOLIN:

17 Q In the ordinary course of business, Google's P&L has  
18 separate P&Ls for Google Ads and for DV360; correct?

19 A Yes.

20 Q And we just established, I believe, that Google Ad  
21 Manager was profitable for 2020 through 2023, as shown here;  
22 correct?

23 A Yes.

24 Q And you would agree that as a whole, Google's display  
25 products were profitable for 2020, 2021, 2022 and 2023

1 through August; correct?

2 A Yes.

3 Q And you referred to some years when Google's display  
4 products were unprofitable; right?

5 A Yes.

6 Q Are you aware of any discussion within Google of  
7 shutting those products down due to that unprofitability?

8 A I can't think of any examples of discussions that we  
9 had which were this product is unprofitable and we should  
10 think about shutting it down because it's unprofitable.

11 Q So let's go back to the white binder then. I want to  
12 ask you about just a few documents before we wrap up.

13 Could you please turn to DTX 1165 in your binder.

14 MR. WOLIN: And we offer that from the defendant's  
15 exhibit list into evidence.

16 THE COURT: I assume there's no objection?

17 MS. GOODMAN: No objection.

18 THE COURT: All right. It's in. And it's going  
19 in as a defense exhibit?

20 MR. WOLIN: Yes. Well, it's been premarked as  
21 DTX 1165.

22 THE COURT: Right. It's in.

23 (Defense Exhibit Number 1165 admitted into evidence.)

24 BY MR. WOLIN:

25 Q So, Ms. Mok, the document is on the screen, and you

1 have it in your binder.

2 Do you see that the document is dated  
3 December 2021; is that correct?

4 A Yes.

5 Q And this presentation was created for a meeting of the  
6 display ads' finance team?

7 A Yes.

8 Q So could we please turn to page 28 of 38 in the  
9 document. And the title that's shown on that page is exam  
10 time; is that correct?

11 A Yes.

12 Q Let's just orient ourselves. So we'll turn forward in  
13 this subsection to page 31 of the document. And the title  
14 at the top is profitability, and it contains some questions  
15 and some answers; correct?

16 A Yes.

17 Q And the first question is: "What year did the display  
18 P&L first become profitable?" With the answer of 2018; do  
19 you see that?

20 A Yes.

21 Q And at the bottom in the first bullet point, it states  
22 that "Google's core display business generated around  
23 800 million in operating profit in 2018, a huge milestone  
24 for our display business."

25 Is that true?



1 A Yes.

2 Q And then it continues: "We're on track to generate  
3 3 billion in operating profit this year."

4 And does that refer to 2021?

5 A I believe so.

6 Q I believe I heard your answer as I believe so; is that  
7 correct?

8 A Sorry. Yes. I'm just comparing it to the  
9 Demonstrative 2.

10 Yes. 3 billion in operating profit is accurate.

11 Q Okay. And then the third question on this slide is:  
12 "What is our year-over-year profitability growth  
13 percentage"; do you see that as well?

14 A Yes.

15 Q And the answer that's shown at the bottom in the last  
16 bullet point is: "167 percent. Display also has the  
17 strongest performance versus plan from an operating profit  
18 perspective"; is that correct?

19 A Yes.

20 Q So I want to flip then to a second document in your  
21 binder, and it's labeled PTX 939.

22 MR. WOLIN: And I would also note for the record  
23 that this is also cross-listed on Google's exhibit list as  
24 DTX 579. So we would offer PTX 939 into evidence.

25 MS. GOODMAN: No objection.

1 THE COURT: All right. It's in.

2 (Plaintiff Exhibit Number 939 admitted into evidence.)

3 BY MR. WOLIN:

4 Q Ms. Mok, do you recognize this document?

5 A I do.

6 Q This document was created to train Google employees on  
7 the DVAA P&Ls; is that correct?

8 A Yes.

9 Q And this one's dated 2018?

10 A Yes.

11 Q So if you could please turn to the page with Bates  
12 number ending in 006.

13 MR. WOLIN: And if we could blow up the top slide,  
14 please.

15 BY MR. WOLIN:

16 Q So this slide describes a plan for DVAA profitability  
17 and value creation in 2019 plus; correct?

18 A Yes.

19 Q And the first bullet point there shows a goal to  
20 increase net revenues; correct?

21 A Yes.

22 Q And it states that there's going to be a focus on  
23 pricing; correct?

24 A I wouldn't characterize this as saying that there would  
25 be a focus on pricing. This was a finance deck where we

1 were looking at different levers the business leaders could  
2 focus on if they wanted to.

3 Q And one of the levers that you listed on this slide,  
4 specifically after an increased net revenues, is pricing?

5 A Yes.

6 Q And then the second two points there refer to  
7 controlling operating expenses and controlling capital  
8 expenditures; correct?

9 A Yes.

10 Q And all of that was a part of discussion about how to  
11 increase DVAA profitability, 2019 onwards?

12 A Yes.

13 MR. WOLIN: So let's flip forward then to the page  
14 with the Bates number ending in 009. And put that one up.  
15 And blow that up, please.

16 BY MR. WOLIN:

17 Q Now, this slide has four boxes; do you see them?

18 A Yes.

19 Q And the one on the left refers to an established  
20 business, and it says: "Established at scale"; do you see  
21 that?

22 A Yes.

23 Q And then do you see at the bottom of the box it says  
24 web?

25 A Yes.

1 Q And that refers to selling web advertising?

2 A Yes.

3 Q And then the goal for web at the bottom includes drive  
4 significant operating profit; correct?

5 A Yes. But I want to clarify that it says goals, but at  
6 the top it says proposal. So proposed goals for discussion.

7 Q Well, to the left of that there's a separate box which  
8 says emerging; correct?

9 A Yes.

10 Q And that one has the apps advertising -- or referred to  
11 in that box?

12 A Yes.

13 Q And then next to that one there's a separate box with  
14 video; correct?

15 A Yes.

16 Q And it refers to video as an early-stage business?

17 A Yes.

18 Q And the -- below the boxes for apps and video it has  
19 different goals for the business than it does for the web  
20 business; correct?

21 A Yes.

22 Q And you mentioned during your examination -- your  
23 direct you mentioned TAC or traffic acquisition costs; is  
24 that correct?

25 A Yes.

1 MR. WOLIN: So let's actually stick with PTX 39 --  
2 or 939 and go to the page with Bates number ending in 005,  
3 please. And blow that up, please.

4 BY MR. WOLIN:

5 Q And the slide here says that "DVAA margin is heavily  
6 dependent upon TAC"; correct?

7 A Yes.

8 Q And TAC, I believe as you testified, represents the  
9 amount of revenue that Google pays to publishers?

10 A Yes.

11 Q So TAC is just revenue that Google passes through from  
12 the advertiser to the publisher; is that correct?

13 A Yes.

14 Q Now, in some transactions within DVA, is it correct  
15 that Google treats TAC differently than it's treated in this  
16 chart?

17 A I -- all the TAC that we recognized as TAC is  
18 represented in the first green bar in this chart.

19 Q But in some transactions, TAC is excluded from the  
20 revenue; is that correct?

21 A There is -- there is no TAC that's excluded from  
22 revenue. Otherwise, it's not TAC.

23 Q Are you aware of situations where the passthrough to  
24 the publisher isn't counted as booked revenue?

25 A Yes.

1 Q And those are situations where you would consider  
2 Google an agent in the transaction instead of a principal?

3 A Yes.

4 Q And those transactions, just to be clear, don't include  
5 TAC as a cost; correct?

6 A Yeah. In those transactions, there's no TAC.

7 Q And in those transactions, booked revenue would be  
8 lower; correct?

9 A Yes.

10 Q But operating margin in those transactions would be  
11 higher if you're treating Google as an agent in the  
12 transactions; correct?

13 A Yes. Operating profit margin would be higher;  
14 operating profit dollars would be exactly the same.

15 Q And there's some transactions where you're treated as  
16 an agent and TAC is excluded; and some transactions where  
17 you're treated as a principal, and TAC is included; correct?

18 A Yes. But the majority were revenues recognized where  
19 Google was a principal.

20 Q And Google makes a decision in its accounting policies  
21 in how to differentiate between the two; correct?

22 MS. GOODMAN: Foundation. The witness testified  
23 she's not an accountant. This line of questioning --

24 THE COURT: She was able to answer the question,  
25 so overruled.

1 BY MR. WOLIN:

2 Q Ms. Mok.

3 A Sorry. Could you repeat the question?

4 Q So there are some -- so in Google's accounting  
5 procedures, they decide whether to treat the revenue as if  
6 Google was an agent and TAC is excluded or Google is a  
7 principal and TAC is included in the revenue?

8 A Yes, that's an accounting determination.

9 Q In the regular course of Google's business, Google's  
10 financial records track revenue for display ads separately  
11 from video ads separately from app ads; correct?

12 A Sorry. Could you repeat the question again?

13 Q In the regular course of Google's business, Google's  
14 financial records track revenue for display ads separately  
15 from video ads separately from app ads; correct?

16 A Not in our financial systems. In our engineering  
17 systems.

18 Q In Google's systems, you track revenue for transactions  
19 through Open Auction separately for transactions through  
20 direct or through Private Auctions?

21 A Yes, for revenue only.

22 MR. WOLIN: We pass the witness, Your Honor.

23 Thank you.

24 THE COURT: All right. Any redirect?

25 MS. GOODMAN: Briefly.

REDIRECT EXAMINATION

BY MS. GOODMAN:

Q Ms. Mok, if you can turn in your white binder to  
DTX 1165, which my colleague asked you questions about.

And can you look at the second bullet under -- in  
the speaker's notes on page 31.

A Yes.

Q And does this say that Google paid out almost  
\$16 billion in publishers in rev share last year?

A Yes.

MS. GOODMAN: Okay. You can take that down,  
Mr. Spalding.

And let's put up PTX 939, which Mr. Wolin also  
asked you about. And let's look at page ending in 007.

BY MS. GOODMAN:

Q And this is as of 2018. This slide says that "3PE  
declining but still 40 percent of total."

What's depicted on this slide?

A This shows of the advertising -- advertising revenue  
that comes in through DBM, which was later renamed DV360,  
how much of that -- those dollars land on non-Google versus  
AdSense for content versus AdMob versus ad exchange  
inventory.

MS. GOODMAN: Okay. And let's look at page ending  
in 009.



1 BY MS. GOODMAN:

2 Q And this -- in the emerging box it says apps; correct?

3 A Yes.

4 Q And in your time in the display business, was apps, as  
5 reflected here, actually achieving its high revenue growth  
6 potential?

7 A Yes.

8 MS. GOODMAN: No further questions.

9 THE COURT: Any recross?

10 MR. WOLIN: No, Your Honor.

11 THE COURT: All right. And I assume, again, this  
12 witness will not be needed further?

13 MR. WOLIN: No, not from us.

14 MS. GOODMAN: I would love to say no, but I  
15 believe that they've disclosed in their rebuttal case a  
16 potential expert who may say something about Ms. Mok's  
17 testimony. So in the extreme unlikely scenario where I need  
18 her, I would like to just not quite release her yet.

19 THE COURT: Ms. Mok, we can't release you as a  
20 witness. You don't have to stay at the courthouse today.  
21 They'll contact you if they need you back here. Do not  
22 discuss your testimony with any witness who has not yet  
23 testified. Thank you.

24 (Witness excused at 9:35 a.m.)

25 THE COURT: All right. Your next witness.

1 MR. ISAACSON: The defendant calls Dr. Mark  
2 Israel.

3 THE COURT: All right. Dr. Israel.

4 THE COURT SECURITY OFFICER: Raise your right  
5 hand, face the deputy clerk.

6 Thereupon,

7 MARK ISRAEL,  
8 having been called as a witness on behalf of the defendant  
9 and having been first duly sworn by the Deputy Clerk, was  
10 examined and testified as follows:

11 (Time noted: 9:36 a.m.)

12 THE DEPUTY CLERK: Thank you.

13 THE COURT: All right. Mr. Isaacson, are you  
14 ready?

15 MR. ISAACSON: Yes, Your Honor.

16 DIRECT EXAMINATION

17 BY MR. ISAACSON:

18 Q Good morning, Dr. Israel. It's Bill Isaacson.

19 Would you introduce yourself to the court and  
20 spell your name.

21 A Sure. And I'm trying the microphone here. Let me know  
22 if it's a problem.

23 My name is Mark Israel. M-A-R-K. I-S-R-A-E-L.

24 Q All right. And would you introduce yourself and tell  
25 the Court about your background.

1 A Sure. I'm a Ph.D. economist by training. I have a  
2 Ph.D. from Stanford University that I received in 2000. A  
3 master's degree. And undergraduate degrees are also in  
4 economics.

5 After I left Stanford, I went and taught economics  
6 and business strategy at the Kellogg School of Management at  
7 Northwestern University. I was there about eight years.  
8 While there, I got the opportunity to do some applied  
9 competition antitrust work, which I fell in love with and  
10 enjoyed more than academics. So I left Kellogg to pursue  
11 that full time in 2008. I went to a firm called Compass  
12 Lexecon, where I've been doing various forms of competition  
13 economics work since. I'm now the president of Compass  
14 Lexecon.

15 Q About how many times have you been engaged as a  
16 consulting expert in the area of economics and competition  
17 economics?

18 A I don't know the exact number, but it's well over 100.

19 Q And would you describe your publications and research  
20 in the field of competition economics?

21 A I have over 25 publications primarily in competition  
22 economics in academic journals. A pretty big part of what I  
23 do continues to be to pursue research. It's generally  
24 connected to cases or topics I've been involved with in  
25 my -- you know, in casework, but I continue to pursue

1 academic research as a big part of my life.

2 Q All right. Have you been qualified as an expert in  
3 economics and industrial organization in prior litigation  
4 matters?

5 A Yes, I have.

6 Q And before you were retained in this matter, had you  
7 ever been engaged by and provided your expert services for a  
8 government agency?

9 A I have been retained by the FTC, the other competition  
10 agency, I think three times. One of which resulted in  
11 testimony, in short, in the *FTC v. Sysco* matter.

12 MR. ISAACSON: All right. I would offer  
13 Dr. Israel's CV, DTX 2537, into evidence, and move to  
14 qualify Dr. Israel as an expert in economics and industrial  
15 organization.

16 THE COURT: Any objection to either?

17 MR. TEITELBAUM: No objection to either, Your  
18 Honor.

19 THE COURT: All right. So 2537 is in evidence.  
20 And Dr. Israel is certified in economics and as an  
21 industrial organization expert.

22 Go ahead.

23 (Defense Exhibit Number 2537 admitted into evidence.)

24 BY MR. ISAACSON:

25 Q Dr. Israel, will you generally describe how you've gone

1 about your work in this case?

2 A Sure.

3 So I've been involved in working in this case,  
4 this industry since early 2021. During that time, have  
5 reviewed the record as fully as I can, reviewed hundreds or  
6 probably thousands of documents, reviewed testimony,  
7 deposition testimony, been here for the trial or read the  
8 trial testimony. And then I think perhaps most importantly  
9 what I can do as an economist, I've done extensive data work  
10 and data analysis with industry data sources, public data  
11 sources and then extensive data from Google and from third  
12 parties related to the industry.

13 Q All right. So let's start by talking about market  
14 definition and market power.

15 At the outset, would you summarize your opinion  
16 about the plaintiffs' three market definitions?

17 A Sure.

18 I think what I would say is the definition of  
19 three separate markets, these three component markets, the  
20 way plaintiffs do, in my view, is kind of narrow and  
21 incomplete in a way that I think -- I guess I might say  
22 misses the forest for the trees.

23 And just to see what I mean for a minute, in my  
24 opinion, having studied the industry, the right way to think  
25 about this business is that ad tech providers are in the

1 business of helping to facilitate matches and really meeting  
2 matches between advertisers and ultimately individuals, but  
3 advertisers and impressions. So say Nike is trying to find  
4 people to advertise shoes to and the ad tech business sits  
5 there in the middle trying to facilitate those connections.  
6 So it's really a business about matches. That's the  
7 product, and that's what competition should study.

8 And to break it down into separate components  
9 looks at pieces of the matches as though those are  
10 informative, but I think those miss the vibrant competition  
11 in various ways to actually make the matches. You sort of  
12 can't see the whole competition if you look at one piece at  
13 a time.

14 Q Let me ask you again --

15 A And perhaps most importantly, you can't analyze  
16 competition by looking at the advertiser side or the  
17 publisher side separately when business is all about  
18 connecting them.

19 Q Okay. We'll be talking about those in detail.

20 But broadly speaking, what are plaintiffs  
21 excluding from their three market definitions?

22 A I guess I would put it in three categories.

23 One of them is other places. Lots of the places  
24 where advertisers can find users, find impressions. So  
25 excluding things like apps, instream video, social media,

1 retail media, connected television. Really among the most  
2 important places where advertisers can find impressions and  
3 can use if the tech they're using for another form of  
4 connection becomes more expensive or worse.

5           Number 2 would be ways that those connections can  
6 be made by focusing just on indirect. They're missing the  
7 active substitution between indirect and direct connections  
8 between advertisers and publishers.

9           And then three would be lots of forms of ad tech.  
10 They're leaving out all sorts of facilitators of the ad tech  
11 providers that are competing to help make these matches.

12 Q   And, again, broadly speaking, what's your opinion of  
13 the effect on this case about plaintiffs' narrow or  
14 incorrect market definitions?

15 A   I mean, I think the disagreements I have, what I see  
16 is, there is -- in the conclusions they reach largely flow  
17 from these separate incomplete markets. So it does a few  
18 things.

19           One thing is, again, it causes them to miss the  
20 vibrant competition that's happening in all these other  
21 places besides what they call open web to make connections.  
22 So vibrant competition with providers and social media and  
23 retail and apps. All of these players are competing to  
24 provide technology to make connections, and they're missing  
25 that competition.

1 I guess I would say, number two, that causes them  
2 to leave out what are the most important parts of  
3 competition, in my view. If you think about -- other than  
4 Google, the main players in providing ad tech out there that  
5 I see are Meta -- meaning Facebook Meta -- Amazon,  
6 Microsoft, TikTok, The Trade Desk. All of these providers  
7 are left out of plaintiffs' markets, as they define them.  
8 As are some of Google's own products, like DV360, which I  
9 see contradicting any claim that Google isn't working with a  
10 wide variety of third parties.

11 As are left out innovations like header bidding or  
12 the recent growth of programmatic direct connections where  
13 you can have a direct connection but done in an automated  
14 programmatic way. All of that is left out of the market.

15 The bottom like effect for me is that causes  
16 plaintiffs to characterize what I see as a very competitive  
17 industry and really one that's, to me, a huge success story  
18 to characterize that as an anticompetitive failure. I think  
19 that derives from defining a lot of the competition out.

20 Q All right. And you touched on this about what the  
21 purpose of ad tech is, and I think talked about the desire  
22 to find users.

23 Can you amplify on that?

24 A Yeah.

25 I mean, ultimately the business is, you know,



1 digital display advertising where advertisers are trying to  
2 connect with users they find in some targeted way on a  
3 digital application or a website or something.

4           So that's -- you know, there's advertisers,  
5 there's publishers, and there's the users. Ad tech sits in  
6 the middle. Its job is to facilitate the match. It's  
7 technology in various forms to facilitate the match.

8 Q All right. Would you please explain how your opinions  
9 on principles of a two-sided market apply in this case?

10 A Yes. So I think this is sort of quintessentially what  
11 economists call a two-sided market in that the industry  
12 exists to create matches, so it exists to connect  
13 advertisers to impressions on publishers' various pages or  
14 apps.

15           And so it's a two-sided market in the sense that  
16 it's trying to connect two sides of the market. Right.  
17 That also means that competition on both sides matters.  
18 Right. If advertisers or publishers leave a particular ad  
19 tech platform, there's no match to be made. So competition  
20 comes from both sides of the market.

21           The price that gets charged -- Professor Lee  
22 talked about this, too. The price that gets charged by  
23 various pieces of ad tech, that gets sort of split between  
24 publishers and advertisers. But it's not  
25 component-by-component the overall price. If ad tech takes

1 out 35 cents, that has a combined effect of raising the ad  
2 price some, lowering what publishers get. So it happens on  
3 both sides.

4 And then finally there's what economists call  
5 network effects, which basically means if there's more  
6 publishers, then advertisers like that platform better, and  
7 vice versa. But it also goes the other way. If a platform  
8 starts to lose customers on either side, you know, then the  
9 other side isn't as happy, doesn't find as many matches, and  
10 the whole platform can start to unravel.

11 Q Okay. You've said that plaintiffs' proposed markets  
12 are too narrow.

13 What would a proper market look like?

14 A I would define a market as a single two-sided market  
15 for matches, for the facilitation of -- for ad tech that  
16 facilitates these connections.

17 Q Have you in this case reached an opinion where you've  
18 tried to define the boundaries of that single two-sided  
19 market?

20 A Not the exact edges of it. What -- the opinion I've  
21 reached is that plaintiffs' market definitions are incorrect  
22 in that they're components, and they're not focusing on the  
23 full -- they're not focusing on the match; they're focusing  
24 on these pieces. And also that the market is clearly too  
25 narrow, as I said before. It leaves out direct connections,

1 it leaves out parts of video but not all of video. It  
2 leaves out apps, even though they directly compete with  
3 websites to make impressions. I think it leaves out social  
4 media, which has become the predominant player in display  
5 advertising.

6 But then as far as, like, what's the ultimate  
7 boundary, does it include email ads? Does it include search  
8 ads? Does it include every type of ad? There, I haven't  
9 reached a final conclusion on the exact boundary because I  
10 don't need to to reach the conclusion that plaintiffs'  
11 markets are too narrow and the market is quite competitive.

12 Q Can we look at DTX 1833 which is a figure from your  
13 report.

14 THE COURT: Any objection to 1833?

15 MR. TEITELBAUM: If it's a figure in the report,  
16 no objection.

17 THE COURT: All right. It's in.

18 (Defense Exhibit Number 1833 admitted into evidence.)

19 BY MR. ISAACSON:

20 Q All right. This is titled U.S. Adult Internet Users  
21 Fraction of Time Spent With Non-Social Non-Video Content  
22 Accessed Via Desktop, Laptop or Mobile Browser from the  
23 years 2010 through 2022. There's a lot of words there at  
24 the end from non-social through via desktop/laptop.

25 Are we talking about a user's time on the web here

1 basically?

2 A Yeah. I mean, the attempt here is to get to websites  
3 basically. Whether they're accessed by a computer or by a  
4 phone, but to get to web.

5 Q All right. And what's the data that's being used in  
6 this chart?

7 A The data is from EMARKETER. I think it's been  
8 discussed some in the trial. It's a standard industry --  
9 sort of a publication that tracks the industry and publishes  
10 tons of data about the industry.

11 Q All right. And what does this chart tell you for this  
12 case?

13 A It tells me that, you know, 15 years ago, people were  
14 primarily -- sort of impressions, the users, were primarily  
15 found on the web. That's -- the reverse is true today. So  
16 when you're thinking about where to make one of these  
17 matches, where to find the impressions, where to find the  
18 users, you know, more than three-quarters of the user's time  
19 is now spent in some place other than a web connection.

20 Q All right. Can we look at DTX 1869, another figure  
21 from your report.

22 THE COURT: I assume no objection?

23 MR. TEITELBAUM: Correct, Your Honor.

24 THE COURT: All right. It's in.

25 (Defense Exhibit Number 1869 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q All right. This is titled Adult Internet Users Time  
3 Spent on Apps Versus Mobile Web for those same years. The  
4 blue bar is -- or the aqua bar is mobile apps, and the pale  
5 bar is mobile browsers.

6 MR. ISAACSON: And I should say, Dr. Israel has  
7 some color blindness, so I sometimes point out these things.

8 THE COURT: All right.

9 BY MR. ISAACSON:

10 Q The data is again from EMARKETER.

11 What does this chart show?

12 A I should say I can tell these colors apart, but I would  
13 have trouble naming them.

14 So this is showing the growth of apps in  
15 particular. So it extends on the last picture to say if you  
16 look at time spent per day by adult in minutes, you know,  
17 over the last several years, the real -- it's been pretty  
18 flat in terms of time spent on the web, but the growth has  
19 been on apps.

20 So, again, if you're an advertiser or thinking  
21 about alternative places to make connections with users and  
22 impressions, apps are a predominant place to find them.

23 Q All right. Let's look at DTX 1831, another figure from  
24 your report.

25 THE COURT: Any objection?

1 MR. TEITELBAUM: No objection.

2 THE COURT: All right. It's in.

3 (Defense Exhibit Number 1831 admitted into evidence.)

4 BY MR. ISAACSON:

5 Q All right. Now, this is not user time, it is titled  
6 U.S. Display Ad Spending by Environment for the years 2013  
7 to 2022. It is, again, EMARKETER data. The bar at the  
8 bottom is desktop/laptop. On top of that is mobile web. On  
9 top of that is mobile in-app. And on top of that is  
10 connected TV. There are dollars in the chart at the top and  
11 percentages on the bottom.

12 Would you explain how this -- what this chart  
13 shows for us?

14 A Sure.

15 So it's EMARKETER data again, as you said. And I  
16 would say it says the -- as the users substitute to apps or  
17 substitute to connected TV away from the traditional web,  
18 the dollars follow. So this is sort of the next step in  
19 saying if -- as dollars come in looking for advertisements  
20 trying to seek the best way to make a match, the dollars --  
21 the spending, which is really more the heart of this case,  
22 is following the trends of the users.

23 Q And how is this evidence of substitution for this case?

24 A I mean, it's one piece of evidence of substitution that  
25 when advertisers are thinking about what's my best or my

1 second best, what are the best places to find users, they  
2 are shifting towards where the users are. So the dollars  
3 are substituting with the users.

4 What I would say as an economist is, that means if  
5 one way that I've advertised here, one form of ad tech that  
6 I've used becomes less attractive, then I'm going to try to  
7 find alternative methods using alternative tech, as apps do,  
8 and I'm going to tend to substitute where the users are.

9 Q Before we look at more data, would you explain the  
10 principles of market definition from the point of view of an  
11 economist?

12 A Sure.

13 So market definition overall is trying -- you  
14 start from the firm or product at issue in a case. So here  
15 that would be Google -- Google's ad tech business,  
16 basically. And you think about who are the key competitors  
17 that constrain Google's pricing or its other strategies in  
18 that business. And you try -- the market tries to define  
19 the universe of significant competitors, I'd say.

20 And the way we would do that as economists is we  
21 think about substitution. So the question that we ask is if  
22 that Google tries to raise its prices or tries to make its  
23 products not work as well or tries to exercise monopoly  
24 power more broadly, where would people, publishers,  
25 advertisers substitute to get alternative sources.

1           So here if Google's ad tech doesn't work as well  
2 and so it's not making these matches as effectively or the  
3 matches are more expensive, what alternative choices do  
4 people have for other tech.

5       Q     All right. And what methods did you observe Professor  
6 Lee has used for his market definition?

7       A     I mean, I think he said this. Not primarily  
8 quantitative methods, so not really measuring the degree of  
9 substitution, but, instead, qualitative methods, sort of  
10 comparing industry recognition and characteristics of  
11 products to try to figure out what products are closer on  
12 those dimensions.

13           So, in my view, you know, although we have to look  
14 at lots of data to try to infer substitution patterns, the  
15 questions should still be about substitution patterns. If  
16 Google's ad tech doesn't work as well, where does it look  
17 like advertisers and publishers are substituting to.

18       Q     All right. Plaintiffs' markets are defined by open-web  
19 display advertising and exclude display ads on social media.

20           What's your opinion on that exclusion?

21       A     I mean, I don't think that it makes any sense. Social  
22 media has become the predominant place to run digital ads  
23 and to run display ads in particular. They're a particular  
24 form of site, of social media site, but they're still  
25 running display ads, often the same display ads that are on



1 other places. It's really -- is it on the Facebook page or  
2 on the New York Times, it's still the same ad. And it's the  
3 predominant place for those ads, and it has its own ad tech  
4 so it provides an alternative. So I see leaving it out as  
5 leaving out a critical competitor for making these matches.

6 Q And so why are you talking about substitution between  
7 types of display ads given that plaintiffs say this case is  
8 about specific ad tech tools?

9 A If the ad tech gets more expensive so then the -- it  
10 becomes more expensive to make the match in that form.

11 So people talk a lot in this industry about the  
12 price for an advertiser. The price of a given ad is the  
13 media cost, which is the publisher's price, and the platform  
14 cost, which is the tech. So if the tech gets more  
15 expensive, then, as I said, we're going to look for where  
16 people will substitute, and they'll substitute to other  
17 places that have different tech. And so places that have  
18 different tech include social media, retail media. These  
19 places have different ad tech. So an increase in the price  
20 or a reduction in the quality of ad tech will drive  
21 advertisers and publishers to places where they can form ads  
22 using different tech.

23 Q So, for example, if an advertiser moves from Google Ads  
24 to Facebook, what shift happens in the ad tech tools?

25 A I mean, all of it changes. Right. So then that's one

1 reason why it's important to think about the overall match.  
2 If you -- if an advertiser, you know, says I don't like the  
3 Google Ads platform anymore, I switch to Facebook, that  
4 match is now made using the Facebook internal ad stack,  
5 which is entirely different tech. It's all Facebook's  
6 in-house tech.

7 Q All right. Let's look at DTX 1915, which is another  
8 figure from your report.

9 THE COURT: Any objection to 1915?

10 MR. TEITELBAUM: No objection.

11 THE COURT: All right. It's in.

12 (Defense Exhibit Number 1915 admitted into evidence.)

13 BY MR. ISAACSON:

14 Q This is titled United States Social Media Display Ad  
15 Spending, 2008 through 2022. Again, dollar figures are at  
16 the top and percentages are at the bottom, and this is  
17 EMARKETER data.

18 What definition -- it says display ad spending.

19 What definition of display ads is being used here?

20 A This is -- this is all from EMARKETER. So this is the  
21 EMARKETER definition, which includes social media as part of  
22 display advertising.

23 Q What does this chart say about the growth of the  
24 display advertising industry on social media?

25 A Just data confirming what I said before. The growth in

1 display advertising on social media has been sort of one of  
2 the predominant trends in the industry taking off since, you  
3 know, 2012 or so. And now you see social media is --  
4 roughly half of all display advertising is on social media.  
5 And as I noted before, all of these players that are listed  
6 at the bottom here use their own ad tech. So if you're not  
7 happy with Google's ad tech, this provides a place to go get  
8 different ad tech.

9 Q And the players at the bottom, you're referring to the  
10 notes of the chart, which include Facebook, Instagram,  
11 LinkedIn, Pinterest, Reddit, Snapchat, TikTok and Twitter  
12 among others; is that what you're referring to?

13 A Yes. It's everything that EMARKETER has in the data on  
14 social media sites where there is display advertising.

15 Q All right. Can we look at DTX 1829, a figure from your  
16 report.

17 THE COURT: Any objection to 1829?

18 MR. TEITELBAUM: No objection.

19 THE COURT: It's in.

20 (Defense Exhibit Number 1829 admitted into evidence.)

21 BY MR. ISAACSON:

22 Q This is titled United States Display Ad Spending by  
23 Social Versus Non-Social Advertising for these years. The  
24 bar at the bottom is the social in dollars and percentages  
25 again that we were just looking at, but now there's a

1 comparison to non-social display ad spending.

2 Now that you can see these together, what do these  
3 charts show about substitution amongst different types of  
4 display advertising?

5 A So I think this chart -- first of all, it shows the  
6 rest of the picture, so it's now roughly 50/50 as far as  
7 where people are putting these display ad dollars.

8 It's clear that overall dollars have gone up, so  
9 dollars are flowing into this industry. So the way I think  
10 about it, I think the way the record supports, is dollars  
11 are flowing into the industry, output is going up, but,  
12 today, there's -- as people think about where to put these  
13 display ad dollars that are flowing in, there is active  
14 competition between, you know, do they go on social or do  
15 they go on non-social. That's a very important margin of  
16 substitution. Lots of advertisers are actively considering  
17 Google Ads versus Facebook as places to put their dollars.

18 Q All right. Can we look at DTX 1972, which is a table  
19 from your report.

20 THE COURT: Any objection?

21 MR. TEITELBAUM: No objection.

22 THE COURT: It's in.

23 (Defense Exhibit Number 1972 admitted into evidence.)

24 BY MR. ISAACSON:

25 Q All right. This is titled Omnicom Top 25 Clients

1 Spending Via Selected Ad Tech Tools and Social Media  
2 Advertising from 2019 to 2022.

3 What is Omnicom?

4 A Omnicom is a large advertising agency.

5 Q And what is this -- there's a lot of figures on this,  
6 but, in general, what is this table showing?

7 A It's showing sort of the realization of what -- a lot  
8 of what Omnicom does. So a lot of what these ad agencies do  
9 is help their clients make these decisions. They work with  
10 clients to evaluate sort of regularly what's the relative  
11 return, return on investment of putting your ad dollars in  
12 different places. And this is showing that as they do that  
13 over time, it's often quarterly or more, dollars move  
14 around.

15 Q All right.

16 A And so you see here, for example, between \$21 and  
17 \$22 --

18 Q Let's stop there so that we can show that more tightly  
19 on the screen.

20 So let's look at the top five advertisers. And  
21 you were about to talk about 21 and 22. Would you please  
22 continue and explain what this has to do with substitution?

23 A Sure.

24 So the example I was going to give is between 21  
25 and 22 you see -- for these five, this is their top five

1 advertisers, dollars were moving into social and out of  
2 other ad tech tools. More generally, again, what these  
3 agencies are doing is running models for their clients that  
4 evaluate the relative performance of different type of  
5 advertisements, and that would include how the tech -- how  
6 the platform and media costs are doing, and they move  
7 dollars around accordingly.

8 Q And why is that evidence of substitution?

9 A What the agencies are doing is some of the most direct  
10 evidence of substitution because they are literally running  
11 models that compare the returns on different types of  
12 advertisements and advise clients to move money accordingly.  
13 So that's exactly a big mechanism by which if, say, Google's  
14 ad tech isn't performing as well and therefore returns are  
15 going down, agencies would advise clients to move money for  
16 that or for any reason why they see less of a return on a  
17 certain type of advertisement.

18 Q All right. Could we look at DTX 1925.

19 MR. ISAACSON: And can I ask, is it okay with  
20 these charts if I put them immediately on the screen and  
21 then you may be able to see it faster.

22 MR. TEITELBAUM: No objection here, Your Honor.

23 THE COURT: Any objection to -- there's none to  
24 1925; correct?

25 MR. TEITELBAUM: And no objection to the exhibit,

1 but putting it on the screen at the time it's being  
2 mentioned is appreciated as well.

3 THE COURT: All right.

4 (Defense Exhibit Number 1925 admitted into evidence.)

5 BY MR. ISAACSON:

6 Q So this is from your report, it's titled U.S. United  
7 States Meta Display Ad Revenue, 2008 through 2022. Again,  
8 it's in dollars and percentages, and it's EMARKETER data.

9 So what does this chart say about the growth of  
10 Meta's display advertising?

11 A Meta has led the charge of the growth of social media.  
12 Meta is really Facebook is Instagram. And, you know, it  
13 started in 2012 or so, as I said. Facebook developed its  
14 advertising platform, its own ad tech, and really has become  
15 the predominant competitor in display advertising.

16 Q All right. Can we look at then DTX 1853.

17 THE COURT: Any objection?

18 MR. TEITELBAUM: No objection.

19 (Defense Exhibit Numbers 1853 and 1853A admitted into  
20 evidence.)

21 BY MR. ISAACSON:

22 Q And can we show -- this is --

23 THE COURT: There's some redactions.

24 MR. ISAACSON: Right. So can we show the Court  
25 and the witness the unredacted version, because this is Meta

1 data.

2 THE COURT: Right. It's Meta's data.

3 MR. ISAACSON: Yes.

4 THE COURT: Which volume is it in?

5 MR. ISAACSON: We have a smaller volume that has  
6 just charts called Volume 2.

7 THE COURT: All right. So there's no objection to  
8 this; correct?

9 MR. TEITELBAUM: Correct, Your Honor.

10 THE COURT: All right. That's fine.

11 BY MR. ISAACSON:

12 Q All right. So this is the share of Meta de-anonymized  
13 advertisers on Facebook and Instagram's ad spending that are  
14 also using Google Ads in 2022. The blue part is the part  
15 that's using -- where the Facebook and Instagram ad spending  
16 is also using Google Ads, and the gray part is the part  
17 where they're not using Google Ads.

18 So I don't need you to discuss any of the numbers  
19 in this chart, but could you explain how this chart relates  
20 to your analysis?

21 A Sure.

22 So you can see the blue part indicating  
23 advertisers who are using both Facebook and Google Ads. So  
24 I won't discuss the numbers here. You can see how large  
25 that is. It relates to the analysis -- and this is an



1 example of what's been called multi-homing. People are  
2 using both Facebook -- advertisers are both on Facebook and  
3 on Google Ads.

4 To me, the critical thing about multi-homing is  
5 that it -- and you see this in the record, too. If an  
6 advertiser is in both places, then it becomes even easier to  
7 move money back and forth. Right. So that's sort of what  
8 they're doing all the time is deciding where to put their  
9 money between the different sources they use.

10 So I take multi-homing here and throughout as an  
11 important indicator that if advertisers are actively using  
12 both, that becomes perhaps the most important, I think,  
13 place to substitute because they're there and they're  
14 regularly evaluating how much to put into each.

15 Q All right. Now I would ask you to look at your black  
16 binder, Volume 1, where we have some business documents and  
17 DTX 399, which is a Google slide deck from March 2017 about  
18 user interface.

19 THE COURT: Any objection to 399?

20 MR. TEITELBAUM: To the extent it's cited in his  
21 report, no objection.

22 MR. ISAACSON: It's cited in his report.

23 THE COURT: All right. It's in.

24 (Defense Exhibit Number 399 admitted into evidence.)

25 MR. ISAACSON: I'm intending to show him a few

1 documents. They've all been cited in his report.

2 BY MR. ISAACSON:

3 Q So if you look at page 6, it says Facebook has two  
4 entry points to its paid advertising world. And then if you  
5 just move forward and click the next page, you'll see that  
6 there is generally a review of the Facebook user interfaces  
7 for their ad programs.

8 What -- how does this -- what does this document  
9 show about competition and substitution?

10 A So this is, again, another of the body of evidence on  
11 substitution and competition. Here, it shows that Google is  
12 actively monitoring Facebook, really comparing AdWords --  
13 now Google Ads -- to Facebook. So they're thinking about  
14 how users are evaluating the two, which users would prefer  
15 to use. And, in particular, there's lots of discussion of  
16 Facebook being, you know, the easiest interface, especially  
17 for small advertisers and Google seeing that as creating  
18 risk that it's going to lose the small advertisers. So it  
19 shows competition and substitution.

20 Q All right. In the same binder, can we look at DTX 733,  
21 which is a Google business document called Accelerating  
22 Display from June 12th, 2019, again cited in your report.

23 MR. TEITELBAUM: No objection.

24 THE COURT: It's in.

25 (Defense Exhibit Number 733 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q All right. If we could look at page 3 of this  
3 document.

4 It says key takeaways on display performance.  
5 Losing -- at the top. Losing share in U.S. display market  
6 overall and to key competitors, Facebook and Trade Desk,  
7 primarily driven by GDA. Google U.S. display 8 percent  
8 year, year, year to date, lags, market, average, growth.

9 And then if you look at page 18, also another --  
10 there's a column on the left where we lose on measurement to  
11 Facebook -- Facebook offers more robust third-party  
12 integration and Amazon's user purchase history is unrivaled.  
13 Creative controls and formats. Facebook, Instagram and  
14 Criteo offer greater creative controls and native formats to  
15 advertisers. Richer targeting signals and inventory,  
16 Facebook has richer audience targeting options. Amazon  
17 continues to build up audience targeting capabilities. And  
18 I don't want to suggest that Google doesn't have a response  
19 to any of this, but I won't put all of that in the record.

20 How does this relate to your analysis of, at this  
21 point, Facebook, but you can touch on the others?

22 A I mean, in Google, as you say, it does have a response.  
23 That's a big part of it is that Google is evaluating  
24 these -- what they refer to as key competitors and deciding  
25 how to compete with it in terms of various ad tech reactions

1 that sort of cover various parts of the ad stack. So it  
2 shows Google taking these as serious important competitors.

3 I think I would most note that of the key  
4 competitors that we've gone through, Facebook, Amazon and  
5 The Trade Desk that was noticed earlier are all outside of  
6 the markets as plaintiffs define them. Criteo is the one  
7 here that would be inside.

8 So it's showing reaction to competition with --  
9 substitution with a number of strong competitors that are  
10 outside the markets as defined.

11 Q Can we look at DTX 1927. Let's talk about another  
12 company, TikTok.

13 THE COURT: Any objection?

14 MR. TEITELBAUM: No objection.

15 THE COURT: All right. It's in.

16 (Defense Exhibit Number 1927 admitted into evidence.)

17 BY MR. ISAACSON:

18 Q All right. So this is U.S. TikTok Display Ad Revenue,  
19 2019 to 2025. These are, again, dollars and in percentages.  
20 The bars that are darker are actual, and beginning in 2023,  
21 these are projected. It says EMARKETER data.

22 Is the projection data also from EMARKETER?

23 A Yes.

24 Q And what does the emergence of TikTok since 2019 say  
25 about competition for display ads and the related ad tech?

1 A So TikTok, again, has its own ad tech stack in-house.  
2 So it's sort of the next iteration. It says to me it's a  
3 dynamically competitive market. TikTok is the next step up  
4 with its own methods and really video-focused, but it's kind  
5 of the next step. Really, the growth of advertising  
6 competition went Facebook, then Amazon, then TikTok as the  
7 big growth stories.

8 Q All right. Can you now go back to that larger binder,  
9 Binder 1, with business documents. And I believe it's  
10 DTX 1188, the -- and this is a Google document titled TikTok  
11 Competitive Overview.

12 THE COURT: Any objection to 1188?

13 MR. TEITELBAUM: No, Your Honor.

14 THE COURT: All right. It's in.

15 (Defense Exhibit Number 1188 admitted into evidence.)

16 BY MR. ISAACSON:

17 Q The -- what does this document say to you when Google  
18 is doing a TikTok competitive overview?

19 A It's the same as the previous document. Not only do we  
20 see the data showing that TikTok is growing, we see Google  
21 paying attention and reacting to that, which is sort of the  
22 other side of the coin of showing important competition.

23 Q All right. And then if we can look at DTX 1974, which  
24 is a table from your report.

25 THE COURT: Any objection to 1974?

1 MR. TEITELBAUM: No objection.

2 (Defense Exhibit Numbers 1974 and 1974A admitted into  
3 evidence.)

4 MR. ISAACSON: And we'll need to show the  
5 unredacted on the screen for the Court and the witness and  
6 counsel, because this is TikTok information.

7 BY MR. ISAACSON:

8 Q It's titled Advertisers With at Least \$1 million in  
9 2022 TikTok Advertising Spending Amongst the Top 50 2022  
10 U.S. Google Advertisers.

11 So on the left column, those are the advertisers  
12 that are being looked at; is that right?

13 A Correct.

14 Q Okay. And then there's spending numbers in the middle  
15 and then percentage changes from 21 --

16 MR. ISAACSON: Let me make sure the Court is with  
17 us here.

18 THE COURT: Got it.

19 MR. ISAACSON: Okay. Sorry, Your Honor.

20 BY MR. ISAACSON:

21 Q So, again, there's advertisers on the left who are  
22 among the top 50 U.S. Google Ads' advertisers who are also  
23 spending on TikTok, and in the middle there's advertising  
24 spending on TikTok and then percentage changes on the far  
25 right, 21 to 22.

1                   What does this chart show with respect to  
2 advertising spend and substitution?

3       A       It shows that many of Google's largest advertisers are  
4 on TikTok to a significant degree and have grown a great  
5 detail on TikTok. So it shows that the impact of TikTok is  
6 affecting Google's largest advertisers, Google Ads or just  
7 advertisers. And, again, it's showing this multi-homing  
8 behavior that I referred to, to the extent these advertisers  
9 are now on Google Ads and on TikTok, and that becomes a very  
10 easy place to move money back and forth in response to even  
11 small differences in performance.

12      Q       And what's your opinion at this point about plaintiffs'  
13 market definition having excluded Meta and then this new  
14 emerging TikTok?

15      A       As I've said, I think that's unjustified. They are  
16 very, very important advertisers with their own advertising  
17 technology. So to the extent there is -- there's a problem  
18 or a high price or anything for Google Ads in making  
19 matches -- or Google's ad tech in making matches, these are  
20 really important alternatives.

21      Q       All right. Can we look at DTX 1916.

22                   THE COURT: Any objection to 1916?

23                   MR. TEITELBAUM: No, Your Honor.

24                   THE COURT: It's in.

25                   (Defense Exhibit Number 1916 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q This is titled U.S. Retail Media Display Ad Spending,  
3 2018 through 2022.

4 What is retail media?

5 A Retail media is I think Amazon, Walmart. Places that  
6 have a site or an app where they sell products, they can  
7 also, and they do aggressively these days, sell  
8 advertisements along with that.

9 Q All right. So this is, again, EMARKETER data with the  
10 dollars at the top and the percentages at the bottom. This  
11 chart doesn't go back as far as back to 2018.

12 When did, for example, Walmart and Target start to  
13 offer retail ads following Amazon?

14 A As I recall, Amazon was definitely first. Walmart got  
15 into the business I think to some extent starting in 2014,  
16 Target starting in 2016. Both of those have grown a lot  
17 recently.

18 I'll say when I first began working on this case,  
19 people didn't think of Walmart or Target as much, and now I  
20 think that whole retail media advertising business has  
21 gotten huge.

22 Q All right. And let's focus on Amazon, DTX 1926.

23 THE COURT: Any objection?

24 MR. TEITELBAUM: No objection.

25 THE COURT: All right. 1926 is in.



1 (Defense Exhibit Number 1926 admitted into evidence.)

2 MR. ISAACSON: Oh, this was already in evidence.

3 Sorry.

4 THE COURT: Oh, all right.

5 BY MR. ISAACSON:

6 Q This is, again, EMARKETER data about U.S. Amazon  
7 display ad revenue going back to 2008 and running through  
8 2022 on a dollar and a percentage basis.

9 What does this chart say about the growth of  
10 Amazon's retail media advertising?

11 A So you see it growing a little later than Meta, as I  
12 said. Sort of a second growth story after Meta, as I said.  
13 But, again, now certainly a very large player, again, with  
14 its own ad tech. So a place that people can -- that  
15 advertisers -- if Nike is trying to sell shoes, they can put  
16 display ads on Amazon as a place to do that if the tech or  
17 the media performs better.

18 Q All right. And if you could look at your first binder  
19 with the business documents. The first exhibit there is  
20 DTX 278. It's titled PBS Competitive Intelligence, which is  
21 publisher business solutions at Google.

22 THE COURT: Any objection?

23 MR. TEITELBAUM: No objection.

24 THE COURT: All right. It's in.

25 (Defense Exhibit Number 278 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q This is a Google slide deck from November 2015, and  
3 it's on competitive intelligence on Amazon. And then if you  
4 look at page 3, the executive summary, it says in the third  
5 bullet: "Amazon is actively building a walled garden to  
6 compete with the DoubleClick stack, and this should not be  
7 underestimated." And then if we look at page -- well, we'll  
8 just stop there.

9 Tell me what this shows you about the ad tech  
10 competition between Amazon and Google.

11 A Well, it's the same as the other documents. It's the  
12 other side of the coin showing Google paying attention to  
13 it. I think clearly it indicates Google takes Amazon as a  
14 very serious competitor.

15 I would note that, you know, they're saying --  
16 they're noting that Amazon is building a walled garden -- it  
17 means Amazon has its own in-house tech -- but that that  
18 walled garden is competing with the DoubleClick stack. So,  
19 to me, this document is consistent with my views generally  
20 in that tech competes with tech, whether it's a walled  
21 garden or not, and that stacks compete against each other as  
22 opposed to component by component.

23 Q All right. In the same binder, if we can go to  
24 DTX 879, another document from -- slide deck from Google  
25 about Amazon.

1 THE COURT: Any objection to 879?

2 MR. TEITELBAUM: No objection.

3 THE COURT: All right. It's in.

4 (Defense Exhibit Number 879 admitted into evidence.)

5 BY MR. ISAACSON:

6 Q This is now in the year 2020, the beginning of 2020.  
7 And on page 2, there's an executive summary, and in the  
8 middle there's -- at the top under description it says:  
9 "Amazon 101 Amazon ads. Amazon has all the building blocks  
10 to compete at Google/Facebook scale. It has the unique  
11 advantage of closing the attribution loop through conversion  
12 data."

13 And then if you look at page 20, it begins several  
14 slides with the -- discussing Amazon's ad stack. And just  
15 as an example, if you look at slide -- at page 23, there's a  
16 slide comparing the ad stack of Google and Amazon.

17 Again, how does this support your opinion about  
18 the competition in ad tech?

19 A Again, it's the same thing. It's showing Google paying  
20 attention to the competition from the stack. I noticed on  
21 the earlier page you showed, there was explicit reference to  
22 Amazon's header bidding product. So it's something we can  
23 talk about more later, but that's a way in which Amazon  
24 competes, which is also outside plaintiffs' markets. But  
25 here you see a comparison of the stacks.

1 And I would say, you know, whenever Google  
2 compares to Amazon, I see them saying we're stronger in some  
3 ways, Amazon is stronger in others. But, nevertheless, they  
4 find the overall Amazon stack to be highly competitive with  
5 Google's ad tech.

6 Q All right. And then one more document about Amazon.  
7 If we could look at DTX 527 in this same binder.

8 MR. TEITELBAUM: No objection.

9 THE COURT: All right. It's in.

10 (Defense Exhibit Number 527 admitted into evidence.)

11 BY MR. ISAACSON:

12 Q All right. This is a Google document called Amazon  
13 Overview. And on page 6, the slide describes Amazon as an  
14 existential threat.

15 At this point, what is your opinion about  
16 plaintiffs' three market definitions, excluding Amazon  
17 display ads and ad tech?

18 A I don't think it makes any sense to exclude Amazon  
19 given its strength as an alternative advertising platform  
20 and the fact that it provides its own tech. So it provides  
21 a substitute if people have any concerns about Google's ad  
22 tech.

23 Q And what does it say about Google having any monopoly  
24 power that they -- given what you have to say about Amazon?

25 A I mean, the points we've made so far fundamentally go

1 to why I conclude Google does not have monopoly power.  
2 Google is facing strong existential competition -- strong  
3 competition from Facebook, growing competition from TikTok,  
4 and now competition from Amazon, so it's not in a position  
5 to dictate the market the way that a monopolist would.

6 Q Okay. Can we look at DTX 1918. Now let's go back to  
7 looking at the web.

8 THE COURT: Any objection?

9 MR. TEITELBAUM: No objection.

10 THE COURT: All right. It's in.

11 (Defense Exhibit Number 1918 admitted into evidence.)

12 BY MR. ISAACSON:

13 Q All right. This is again EMARKETER data. It is titled  
14 U.S. Desktop/Laptop Display Ad Spending, 2013 to 2022. And  
15 it's in dollars and percentages.

16 What does this chart say about the growth of  
17 display advertising on the open web?

18 A So this is more EMARKETER data. It shows that people  
19 are moving away from desktop/laptop. And ten years ago  
20 maybe that was the bulk of the activity, but now the bulk of  
21 the activity is, you know, mobile and other places. So,  
22 again, web-based focus like the government's market  
23 definition seemed to me to miss where the competitive action  
24 is today.

25 Q All right. And what does it say -- what does this

1 chart, in comparison with the other charts we've been  
2 looking at, say about substitution?

3 A Again, this is that the -- the dollars are following  
4 where the users are. Right. So the users have moved away  
5 from the web and the dollars are following.

6 Again, if you're looking for places to make these  
7 matches and find users, many of the best substitutes now are  
8 going to be off the laptop and desktop on mobile.

9 Q All right. If we can look at DTX 1874 from your  
10 report.

11 THE COURT: Any objection?

12 MR. TEITELBAUM: No objection.

13 THE COURT: It's in.

14 (Defense Exhibit Number 1874 admitted into evidence.)

15 BY MR. ISAACSON:

16 Q All right. This is, again, EMARKETER data. The title  
17 is The Percentage of U.S. Display Ad Spending Accruing to  
18 Selected Industry Participants. And here, the bottom is  
19 Google, and above that in blue is Meta. And then in orange  
20 is Amazon, and above that is TikTok, and the rest is other.

21 What does this chart show about substitution  
22 between different firms that have ad tech?

23 A I mean, it certainly shows the share it's substituting.  
24 So the pattern is what I described. You know, Google grew  
25 early on, has declined in its share since 2013. Everybody's

1 dollars are going up, but the dollars are increasingly  
2 flowing first to Meta, then to Amazon, more recently to  
3 TikTok as these other alternatives become stronger --  
4 stronger alternatives.

5 Q All right. And can we look at DTX 1969 also from your  
6 report.

7 THE COURT: Any objection?

8 MR. TEITELBAUM: No objection.

9 THE COURT: All right. It's in.

10 (Defense Exhibit Number 1969 admitted into evidence.)

11 BY MR. ISAACSON:

12 Q All right. And this is, again, U.S. display ad revenue  
13 by company.

14 Is this is basically the same chart as before but  
15 now you're showing more of the companies?

16 A Correct.

17 Q So now what we've been looking at from EMARKETER is  
18 real-world data. Professor Lee has discussed why the  
19 cellophane fallacy means you should not look at real-world  
20 substitution data in a case about alleged monopolists.

21 What do you have to say about that?

22 A I just disagree. As an economist, I think we try to  
23 look at substitution data whenever we can. Real-world data  
24 is the way to see who's competing with who. We can also  
25 look at company documents like I've done, but data is the

1 way to measure substitution.

2           The cellophane fallacy, you know, would say that  
3 that in some cases you should consider whether the  
4 substitution you're seeing is just driven. The idea -- the  
5 original name cellophane was maybe at the price as  
6 cellophane gets so high, people will wrap their sandwiches  
7 in newspaper instead, but is that really a substitute. That  
8 was the question. I think Professor Lee's example was if  
9 the price of gas gets high enough, maybe people will just  
10 walk.

11           So I think it's reasonable to ask are we seeing  
12 things like newspaper for sandwiches? But here what we're  
13 seeing is Facebook and Amazon and TikTok becoming the  
14 strongest players, the predominant players referred to as  
15 existential threats. And so I don't think that that  
16 analysis applies. You're seeing real-world data of  
17 substitution to extremely strong competitors, not  
18 substitution that's only driven because Google has so much  
19 monopoly power that it drives people to inferior options.

20 Q   And I think there was an analogy given to if the price  
21 of gasoline gets to a certain point, people will walk or  
22 ride bikes more.

23           How does that analogy compare to what you're  
24 seeing in this industry?

25 A   Yeah. I mean, that's a case where as an economist you



1 will say maybe I need to think about -- maybe the price of  
2 gas is so high it's changed people's behavior. But I just  
3 don't see any basis in the record to say that Facebook or  
4 Amazon or TikTok are like walking instead of driving.  
5 Right. These are strong competitors that are being taken as  
6 very serious competitive threats. They have been for a long  
7 time, you know, at various price levels that have existed.

8           So I just -- again, I think you look at real-world  
9 data, you can ask yourself are the data only reflecting  
10 something unusual, but here I think they're reflecting  
11 substitution to extremely strong competitors.

12 Q     And do economists in monopolization cases ordinarily  
13 look at real-world data or documents on substitution?

14 A     Yeah, I certainly do. And this happened in every such  
15 case I've been involved with.

16           Again, economists try to look at data on how  
17 people substitute on what we call cross-elasticities.  
18 That's our technical term, whatever data we can get.

19           And, again, I acknowledge you should ask the  
20 question, do we think this substitution is not real or just  
21 being driven by monopoly power, but I just don't think that  
22 fits when you have powerful competitors who have their own  
23 ad tech that the company documents are seeing as extremely  
24 strong threats.

25 Q     All right. We'll talk about prices later, but what

1 about the point that the market with a monopolist may  
2 already be infected with super competitive prices?

3 A Well, that's sort of the more technical version of what  
4 you say for cellophane. The question would be is are we  
5 only seeing substitution because Google's prices are  
6 inflated, and therefore that's the only thing driving  
7 substitution. We can get into it more later, but, you know,  
8 in fact, for many of the products -- most of the products  
9 that Google offers internally, like using Google Ads and  
10 AdX, certainly using DV360, its prices are not even  
11 particularly high.

12 I know there's been discussion about what prices  
13 are high or low, but I think it's clear that Google offers a  
14 number of ad tech products that don't have particularly high  
15 prices relative to the market. And, yet, certainly from  
16 Google Ads and DV360, we see a strong substitution of these  
17 other options.

18 So I don't see any basis to say that's being  
19 driven by monopoly power or by prices that are so high that  
20 people seek out inferior alternatives.

21 Q And why are the levels of substitution you've been  
22 looking at sufficient, in your mind, to be a constraint on  
23 prices and Google's prices?

24 A Is there a strong substitution that the company  
25 documents are taken very seriously and reacting to?

1 Their -- it's substitution that we see to people with  
2 different ad tech. I'm referring to the ad tech stacks  
3 competing with each other.

4 Just to be clear, I'm not saying that every single  
5 advertiser or publisher would switch, or even that  
6 advertisers or publishers would switch 100 percent of their  
7 budgets. That's not the question. Right. The question is  
8 if Google tries to raise prices or do something bad with its  
9 tech, will it lose revenue? Will dollars flow out? And  
10 that's what we're seeing. We're seeing dollars flow to  
11 these other alternatives.

12 Q All right. And so how do economists typically look at  
13 substitution? Like, what are they looking at for its  
14 substitution?

15 A They're looking to see -- economists sometimes use the  
16 phrase marginal customers. That just means there are a set  
17 of people who are actively considering the options. There's  
18 a set of dollars that are actively moving between the  
19 options. Again, it's never all of the dollars.

20 Like, if you use the example of Pepsi and Coke,  
21 there's a lot of people who are extremely loyal to one of  
22 those products or the other, but they still clearly compete  
23 with each other and aren't monopolists because there are  
24 people "on the margin" who will substitute.

25 Here, we have all these buyers, for example, who

1 use both Google Ads and Facebook and are moving dollars back  
2 and forth. We have agencies building models, the purpose of  
3 which is to help people move dollars back and forth. That's  
4 the kind of marginal substitution that we look for.

5 Q Okay. And how does return on investment for  
6 advertising affect the substitution analysis?

7 A Increasingly advertisers attempt to measure the return  
8 on investment, which means basically, in simple terms, if I  
9 spend another dollar on advertisement, how much more profit  
10 do I get back for that dollar? And so that measures the  
11 return. That return is driven by various things, both how  
12 good is the match, which can be how well does the ad tech  
13 work, and how much does it cost.

14 And to the extent that, you know, as alleged,  
15 Google were to degrade in the quality of the match, the  
16 quality of the tech or raising the price, then what you  
17 would see would be the return on investment go down. And  
18 exactly what these agency models do and these evaluations do  
19 is say if I see the return of investment go down on one form  
20 of advertising and one form of tech, I move my dollars to  
21 another one. That's a really active every day decision in  
22 this industry.

23 Q And has Professor Lee done any analysis of substitution  
24 in response to return on investment?

25 A Not that I've seen, no.

1 Q How does -- substitution for display ads or ad spend on  
2 the web and these other choices you've been talking about,  
3 how does that act as a constraint on ad tech tools?

4 A So it's what I've said. If the price -- the price of  
5 the ad is basically the media price, the publisher's price,  
6 plus the tech price. And the quality, the return you get is  
7 heavily driven by the quality of the match.

8 So if the tech isn't working as well or it's too  
9 expensive, your return's going to go down, you're going to  
10 look for places with better tech, and that is all of the  
11 options that we've been talking about.

12 Q And now your conclusions about a two-sided market, how  
13 does that affect the substitution analysis?

14 A It affects it because the substitution is happening on  
15 both sides, and they both affect things. All right. So you  
16 can't just look at component by component on one side or the  
17 other.

18 So, for example, if the return on investment goes  
19 down, if the price goes up, it might be that advertisers  
20 start by substituting away from Google Ads to Facebook or  
21 Amazon or these other options. Right. But then publishers  
22 also are getting worse returns, so they're going to look for  
23 non-Google tech. In their case it might be another exchange  
24 that they can use or switching more of their content to  
25 apps. But both sides are going to start to substitute.

1 But what really matters is the feedback affects.  
2 So if advertisers start switching to Facebook, now this  
3 discussion we've heard that Google benefits from having good  
4 advertisers, that becomes less true. And so Google -- the  
5 publishers now see Google as not having as good of  
6 advertisers, so they're going to try to find the Google  
7 platform less attractive. Maybe they'll switch to apps or  
8 they'll switch to a subscription model or whatever they do,  
9 or they'll switch to a different exchange. And those two  
10 effects start feeding back on each other through these  
11 network effects.

12 Q All right. Let's look at more data, DTX 1917.

13 THE COURT: Any objection?

14 MR. TEITELBAUM: No objection.

15 THE COURT: All right. It's in.

16 (Defense Exhibit Number 1917 admitted into evidence.)

17 BY MR. ISAACSON:

18 Q This is titled U.S. Video Display Ad Spending, 2008 to  
19 2022. It's, again, EMARKETER data. And it's in dollars and  
20 percentages.

21 Now, this is overall video. About what percentage  
22 of this would be instream videos?

23 A So it's more than half. Today, about 57 percent of  
24 video spending is instream. And that's important because  
25 the plaintiffs' market would include outstream, which is a

1 video that sort of shows in its own box, but not instream,  
2 which is a video that shows along with another video.

3 Q All right. Could we look at DTX 1922. This is already  
4 in evidence. This is United States connected TV display  
5 advertising -- ad spending, 2017 through 2022 from EMARKETER  
6 in dollars and percentages. So this is now connected TV.

7 What does this chart say about the growth of  
8 advertising on connected TV or streaming?

9 A Connected TV has now become where advertising dollars  
10 are going. So there was websites, and then there was apps,  
11 now there's connected TV as a growth area. So that's  
12 becoming a place to form these connections.

13 I should note here that's a good example because  
14 the people moved to connected TV -- meaning your TV has an  
15 Internet connection -- and then your advertising dollars  
16 moved there, and the ad tech has moved there, too. So, for  
17 example, The Trade Desk gets a lot of its business from  
18 connected TV. Again, showing how both users and ad tech  
19 providers are substituting between these options.

20 Q And just to be clear, when it says connected TV display  
21 ad spending in the title, that's the EMARKETER definition of  
22 display ads -- ads includes connected TV; do I have that  
23 right?

24 A Yes.

25 Q Okay. Now, and this chart begins back in 2017, it is

1 growing after that.

2 Before that, say by 2015, who's starting to offer  
3 connected TV ads?

4 A I think in early on it was Roku. So, again, this is  
5 all smart TV connections where your TV or your box is  
6 plugged into the Internet, and one of the first providers of  
7 that was Roku, and they started to build up this model where  
8 now we have people, we know their Internet connections and  
9 we can sell them ads.

10 Q All right. And there are jumps in this. So, for  
11 example, from -- there's a big jump in 2019.

12 What's happening at that time?

13 A All the jumps you would see would be because more and  
14 more providers are getting into this business, more and more  
15 smart TVs and streaming services and so on. I think 2019 to  
16 2020 is when Disney got into this business.

17 Q All right. Can we look at DTX 1858.

18 THE COURT: Any objection?

19 MR. TEITELBAUM: No objection.

20 THE COURT: All right. It's in.

21 (Defense Exhibit Number 1858 admitted into evidence.)

22 BY MR. ISAACSON:

23 Q This is titled Distribution of Google Ads U.S. Web  
24 Display Ad Spending by Advertiser Use of Instream Video and  
25 Other Display Advertising. The pink is instream video only



1 3.9 percent. The -- most of the pie chart, 64.3 percent, is  
2 both instream and other display.

3 What's the data in this chart showing, and  
4 specifically about multi-homing?

5 A Yeah. So this is Google Ads data, so this is what  
6 Google Ads' advertisers are doing. And it shows that  
7 roughly -- just under two-thirds of them are multi-homing.  
8 Which, again, what I take that to mean is they're actively  
9 doing both, and so that's an easy substitution. They can  
10 just move dollars around on the margin, as economists say,  
11 based on the relative returns.

12 Q All right. And if we could look at DTX 1857.

13 MR. TEITELBAUM: No objection.

14 THE COURT: All right. It's in.

15 (Defense Exhibit Number 1857 admitted into evidence.)

16 BY MR. ISAACSON:

17 Q All right. This is a comparison of instream video and  
18 other display on a percentage basis in the United States  
19 from Google Ads.

20 So this is Google Ads data again?

21 A Yes.

22 Q And what does this show about substitution for instream  
23 video?

24 A Again, looking at Google Ads buyers in particular, a  
25 lot -- there's an increasing use. Almost a third of their

1 spending is now instream video, which would be outside of  
2 plaintiffs' market.

3 Q Okay. Professor Lee excludes native ads from his  
4 definition of display ads.

5 Do you have an opinion about that exclusion?

6 A Yes. So I find that exclusion -- well, that's another  
7 one I find puzzling. I disagree with. In the case of  
8 native ads, I personally, and I think the industry even  
9 finds it difficult to define what a native ad is versus a  
10 display ad. A native ad in some sense I think is an ad that  
11 is sort of more integrated into the native look of the page.

12 But, you know, I think EMARKETER doesn't recognize  
13 that distinction. There's testimony in the record from  
14 people who don't recognize the distinction. I think if you  
15 just look -- like, if you go to a web page, sometimes you'll  
16 see content recommendation boxes at the bottom of the page.  
17 Those will be called native even though a display bar right  
18 next to them is not.

19 So I think that one just sort of on the objective  
20 characteristics and recognition of the product also, it's  
21 very hard to see the distinction.

22 Q All right. Let's talk about ads in apps. DTX 1920.

23 MR. TEITELBAUM: No objection.

24 THE COURT: It's in.

25 (Defense Exhibit Number 1920 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q This is United States Mobile In-App Display Ad  
3 Spending, 2013 through 2022. This is, again, EMARKETER. A  
4 dollar basis at the top, and a percentage basis at the  
5 bottom.

6 What does this tell us about the growth of display  
7 ad spending on apps?

8 A Yeah. So apps have become the predominant place for  
9 spending. Right. So you see the people that moved apps, as  
10 we saw earlier, so the dollars have followed. And, again,  
11 if you're seeking to find a user and you're not satisfied  
12 with your current way to connect with them, apps are going  
13 to be a major way that people do it.

14 Q All right. Let's look at DTX 1855 from your report.

15 MR. TEITELBAUM: No objection.

16 THE COURT: All right. It's in.

17 (Defense Exhibit Number 1855 admitted into evidence.)

18 BY MR. ISAACSON:

19 Q All right. This is titled Distribution of Google Ads  
20 United States Non-Video Display Ad Spending by Advertiser  
21 Use of App and Web Advertising. This is from the year 2022.  
22 The 1.1 percent of pink says app only; 9 percent says web  
23 only; and 89.9 percent says both.

24 What is this -- and this is based on Google Ads  
25 data; is that right?

1 A Yes.

2 Q Okay. What does this chart explain for you?

3 A Just like we've seen before, Google Ads users are  
4 multi-homing, so they're actively in 90 percent of the cases  
5 on both the web and apps. So, again, easy even within  
6 Google Ads to move money back and forth.

7 Q All right. Let's look at DTX 1854.

8 MR. TEITELBAUM: No objection.

9 THE COURT: All right. It's in.

10 (Defense Exhibit Number 1854 admitted into evidence.)

11 BY MR. ISAACSON:

12 Q This is Google Ads United States Non-Video Display Ad  
13 Spending by App Versus Web, over ten years, 2012 through  
14 2022. The bar at the bottom in green is apps, and in gray  
15 at the top is web.

16 So this is Google Ads data?

17 A Yes.

18 Q Okay. And what does this chart show with respect to  
19 substitution between spend on ads on apps and on the web?

20 A I mean, generally it shows dollars flowing to --  
21 increasingly to app over time.

22 I would quickly note, it's a smaller percentage  
23 than we saw from EMARKETER as a whole. I think another  
24 point that makes is that although apps are generally more  
25 than half now, it's smaller than that at Google Ads, which

1 reflects the fact that there are other ad tech providers and  
2 apps who are even larger, which is why this is important  
3 here. If people substitute to apps, they're not only  
4 substituting on ad format, they are, in many cases,  
5 substituting to a different form of tech.

6 Q What does it say about plaintiffs' market definitions,  
7 they do not account for display ads on apps or the  
8 technology for those ads?

9 A Yeah. I mean, another fundamental omission to me,  
10 that's where a lot of the auction is, that's where there's  
11 other tech providers. I don't see things in the record to  
12 indicate advertisers are not using that alternative or that  
13 publishers are not putting more and more on apps. So they  
14 are missing what is now the predominant place to make these  
15 connections.

16 Q All right. If we could look at DTX 1923.

17 THE COURT: Any objection?

18 MR. TEITELBAUM: No objection.

19 THE COURT: All right. It's in.

20 (Defense Exhibit Number 1923 admitted into evidence.)

21 BY MR. ISAACSON:

22 Q This is U.S. Direct Display Ad spending, 2013 through  
23 2022. It's EMARKETER. So it's, again, on a dollar and a  
24 percentage basis.

25 Now we're talking about direct spending on display

1 ads. What does this chart say about the way that  
2 advertisers and publishers are connecting?

3 A It says that the majority and increasing over the last  
4 eight to ten years is actually direct connections. So this  
5 is EMARKETER data again. But about three-fourths or more of  
6 the connections are actually direct connections, not  
7 indirect.

8 I should note that a lot of these are what's  
9 called programmatic direct. So it's a direct connection  
10 between an advertiser and a publisher. But using ad tech,  
11 it's just going straight to the publisher's ad tech.

12 Q So all the direct deals are not human beings talking to  
13 human beings; some of it's through ad tech?

14 A Yeah. In fact, the majority of direct deals these days  
15 are ad tech. So that sometimes can be confusing, but it's  
16 not old -- you know, it's not old manual transactions. It's  
17 tech. Ads are targeted and served by tech. It's just  
18 directly between a publisher and advertiser have a direct  
19 connection that uses that tech.

20 MR. ISAACSON: All right. Can we look at  
21 DTX 1924.

22 MR. TEITELBAUM: No objection.

23 THE COURT: All right. It's in.

24 (Defense Exhibit Number 1924 admitted into evidence.)

25 BY MR. ISAACSON:

1 Q This is titled U.S. Indirect Display Ad Spending. So  
2 this is the other side of the coin. It's EMARKETER data.

3 And when you look at this chart about the trends  
4 in indirect and compare it to the previous chart on direct,  
5 what does that say about substitution?

6 A In recent years, dollars have been flowing from  
7 indirect to direct. And, again, a fair bit of that is  
8 because of the growth -- of another important ad tech  
9 development that's not in plaintiffs' markets, which is  
10 in-house ad tech at publishers that allows direct  
11 connections facilitated by ad tech.

12 Q The Court has heard that direct sales can earn more  
13 money than indirect sales.

14 In light of that, how can there be substitution?

15 A I mean, it really is a fundamental tradeoff that  
16 underlies a lot of the ad tech business, and certainly the  
17 indirect ad tech business, which is -- and it's been  
18 described correctly, I think. A lot of indirect tech exists  
19 to sell impressions that weren't sold by direct deals. But  
20 of course what is sold by a direct deal depends on how hard  
21 you work -- how hard your salespeople work to go make  
22 another direct deal. So you're investing money in another  
23 direct deal.

24 To the extent that indirect tech doesn't work as  
25 well, becomes more expensive, it's not like you switch all

1 of it. Again, none of this is complete. But if the tech  
2 doesn't work as well, then it's going to be worth -- the  
3 return on investment is going to shift to favoring, you  
4 know, working a little harder to make a few more direct  
5 deals.

6 So nobody's going 100 or zero, but if the tech  
7 doesn't work as well, you substitute more effort on getting  
8 the last five or ten direct deals. And, again, that means  
9 dollars flow out of the ad tech provider's pocket.

10 Q All right. The Court has heard about enhanced Dynamic  
11 Allocation.

12 What does enhanced Dynamic Allocation say about  
13 whether there is substitution between direct and indirect  
14 transactions?

15 A Enhanced Dynamic Allocation was explicitly a Google  
16 program to put direct and indirect sales in competition.  
17 Right. So the idea was don't just have the indirect stuff  
18 that is sold via these ad tech methods, have a direct  
19 comparison of the value of selling more indirect versus  
20 direct, and go indirect if it's more valuable. So it puts  
21 them -- inside Google's ad tech puts direct and indirect in  
22 direct competition, even though one part of that would be  
23 left out of plaintiffs' market.

24 Q And do plaintiffs include direct transactions in their  
25 three market definitions and market shares?



1 A I'm glad you asked just so I can clarify what I just  
2 said.

3 So the answer is yes or no. Direct sales are  
4 included in their ad server, so when they do the ad server  
5 sales and market shares, they include the direct sales that  
6 are facilitated by the ad server, but they are not included  
7 in their ad exchange or advertiser ad network markets.

8 Again, to me, that's another reflection of this  
9 artificiality of dividing things up, because if you go  
10 direct, you're not using any of the ad tech, so it really  
11 should be in all those markets, not separately subdivided  
12 that way.

13 Q Can we look at DTX 1865.

14 MR. TEITELBAUM: No objection.

15 THE COURT: All right. 1865 is in.

16 (Defense Exhibit Number 1865 admitted into evidence.)

17 BY MR. ISAACSON:

18 Q All right. And now this is the distribution of the  
19 United States DFP impressions by publisher use of direct and  
20 indirect sales. And it says direct only is 1.3 percent;  
21 indirect only is 46.1 percent; and 52.6 percent is both.

22 So what is this data and what is this showing  
23 about multi-homing?

24 A So these are DFP data now because this is on the  
25 publisher side, and this is saying that just over half of

1 publishers are using both direct and indirect.

2           So, again, it's not all, but there is -- this is  
3 sort of this marginal customer. There are this large number  
4 of publishers who are using both, and therefore we know  
5 within the very logic of the DFP system because of EDA,  
6 there's a tradeoff, and generally they have both these  
7 options as options they use.

8 Q     All right. If I can ask you to look in your binder --  
9 and we won't put this on the screen, it's a third-party  
10 document. This is from Omnicom.

11           MR. ISAACSON: So this has been produced by that  
12 agent under seal. And I move DTX 940.

13           THE WITNESS: I'm sorry. What was the number?

14           MR. ISAACSON: 940. DTX 940.

15           THE COURT: It's in the larger volume?

16           MR. ISAACSON: Yes.

17           MR. TEITELBAUM: Objection.

18           THE COURT: All right. It's in.

19           (Defense Exhibit Number 940 admitted into evidence.)

20 BY MR. ISAACSON:

21 Q     If we could just turn to page 20.

22 A     Sorry. I still don't have it. It's Volume 1?

23 Q     Yes.

24 A     940?

25 Q     Yes.

1 A I've got it. Thank you.

2 Q And there's a chart there that has a start, and  
3 underneath it it talks about shifting certain spend.

4 Would you explain what this document says to you  
5 regarding substitution between direct and indirect buying?

6 A Remind me of the page again.

7 Q Page 20. Over on the left. Not on the screen. Not  
8 that that was that ...

9 A Okay. So I see it, and I'm familiar with this.

10 So this is a pretty standard agency document where  
11 they're talking to a client about what to do with their  
12 money. I talked earlier about they talk about moving it  
13 between various types of ads. Here they are recommending  
14 shifting it out of -- basically I won't say all the words,  
15 but out of indirect into direct. So it's another version of  
16 that sort of substitution. They're basically saying in  
17 order to maximize business results, which is what agencies  
18 do, they are talking about shifting some more into direct.

19 BY MR. ISAACSON:

20 Q All right. Let's look at another chart, DTX 1847 from  
21 your report.

22 MR. TEITELBAUM: No objection.

23 THE COURT: All right. It's in.

24 (Defense Exhibit Number 1847 admitted into evidence.)

25 BY MR. ISAACSON:

1 Q This is titled Google Fitbit Quarterly Display  
2 Advertising Spend Distribution, and across the top this is  
3 the distribution across Google Ads, DV360, YouTube, social  
4 and direct. This is Fitbit display advertising spend.

5 What is this chart discussing?

6 A So we're switching gears a little. This is now Google  
7 as an advertiser, not Google as an ad tech provider.

8 Q So Google is advertising its Fitbit product?

9 A Correct. And so it's looking at how over by quarter  
10 where Google puts its money to advertise its Fitbit. And  
11 basically what we see is if you look across Google Ads,  
12 DV360, putting it on YouTube, putting it in social media or  
13 direct buys, the dollars are just moving around a lot.

14 So generally what it shows you is they are  
15 shifting dollars around. It's certainly consistent with all  
16 the other evidence I've discussed on the record. We see  
17 companies again evaluating the relative performance of these  
18 different types of advertising and shifting money around it,  
19 and we see Google doing that.

20 Q All right. DTX 1931, please.

21 MR. TEITELBAUM: No objection.

22 THE COURT: All right. It's in.

23 (Defense Exhibit Number 1931 admitted into evidence.)

24 BY MR. ISAACSON:

25 Q Now, this is advertising spend by Google for when

1 they're advertising their Pixel phones; right?

2 A Correct. It's just the same story. You see the  
3 dollars moving around pretty dramatically from quarter to  
4 quarter. And, again, some of this, based on what you see  
5 companies doing, is going to be driven by relative  
6 performance. Or at least, again, the record shows companies  
7 evaluating relative performance, and here we see an outcome  
8 being that they move money around.

9 Q All right. DTX 1932.

10 Now, this is --

11 THE COURT: Any objection?

12 MR. TEITELBAUM: No objection.

13 THE COURT: All right. It's in.

14 (Defense Exhibit Number 1932 admitted into evidence.)

15 BY MR. ISAACSON:

16 Q This is where Google is advertising its Play store; is  
17 that correct?

18 A Correct.

19 Q This is showing the same things we've just been  
20 discussing?

21 A Correct.

22 Q Let's look at DTX 1848.

23 MR. TEITELBAUM: No objection.

24 THE COURT: It's in.

25 (Defense Exhibit Number 1848 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q Now, this is no longer Google advertising, this is  
3 Comcast; is that correct?

4 A Yes.

5 Q So this is Comcast Xfinity Internet display ad  
6 spending. Their categories are DV360, other ad tech,  
7 direct, social, video and other.

8 What does this show about substitution?

9 A So this is year by year. So it doesn't bounce around  
10 quite as much. But we see Comcast when trying to advertise  
11 its home Internet product has overtime been shifting -- been  
12 substituting money towards social and video and away from  
13 some other ad tech.

14 Q All right. Let's move on now to DTX 1928.

15 THE COURT: Any objection?

16 MR. TEITELBAUM: No, Your Honor.

17 THE COURT: All right. It's in.

18 (Defense Exhibit Number 1928 admitted into evidence.)

19 BY MR. ISAACSON:

20 Q So now this is -- in the United States, Google's  
21 Display Ad Revenue, 2008 through 2022. This is from  
22 EMARKETER. So would you explain -- it's in dollars and  
23 percentages. And at the bottom, Google is at 10 percent.

24 Now, would you explain what the display ad revenue  
25 is here and how these percentages are done?

1 A All right. So this is -- the display ad revenue on the  
2 top is just the total amount of money that Google brings in  
3 from its display ad business. This is all EMARKETER data to  
4 be consistent here.

5 But it's the total amount of money that Google  
6 brings in from its display business. That includes Google's  
7 ad tech, it also includes its own profits like YouTube. And  
8 then the denominator is the total amount of money that's  
9 spent in the display ad business, which includes both the  
10 amount that goes to publishers that's spent on the media and  
11 the amount that's spent on the ad tech.

12 Q So the display ad revenue, it's not just the ad tech  
13 intermediary money, it's also when Google gets money for ads  
14 on its owned-and-operated properties like YouTube?

15 A Correct. This whole -- all of this analysis is --  
16 again, we talk about media and platforms. So what goes to  
17 the publisher is media, what goes to the ad tech is  
18 platform. So everything on here is the combined sum of  
19 those dollars.

20 So basically advertisers spend some money, ad tech  
21 providers get some, publishers get some. This is that  
22 entire universe. And it says of that entire universe, the  
23 amount that goes to Google, both in its role as a publisher  
24 of YouTube and so on and in its role as a tech provider,  
25 Google gets about 10 percent of the industry revenue.

1 Q And the display ads included in this chart, we talked  
2 before about the EMARKETER definition of display ads. That  
3 includes the social, retail, apps, connected TV; right?

4 A Yes. It's web, social, app, video, connected TV.

5 Q All right. And the 10 percent in 2022 for Google,  
6 about how much of that is the money they take in because  
7 people buy ads on YouTube?

8 A About half.

9 Q The -- so the chart shows Google's display ad revenue  
10 going up significantly and the percentages declining.

11 What does that say to you about what's happening  
12 with this alleged monopolist Google?

13 A I mean, it says the industry output, as I would use the  
14 term, the total amount that advertisers are spending on  
15 advertising digitally is exploding, and Google is getting a  
16 smaller portion of it.

17 So what that tells me, you know, if I look for  
18 high-level evidence of monopolization, a company that  
19 somehow has its thumb on the industry and controls  
20 everything, if that's true, I would look for it taking in a  
21 very large percentage of the revenue because it's got  
22 something the industry can't live without.

23 When I see Google at 10 percent of the total and  
24 declining, to me, Google is certainly taking a piece, but  
25 it's not like Google is taking the majority. The industry



1 is actually growing much faster than Google's piece.

2 Q All right. Can we -- going back to your first binder  
3 which has the business documents, Volume 1, DTX 571.

4 THE COURT: Any objection?

5 MR. TEITELBAUM: No, Your Honor.

6 THE COURT: It's in.

7 (Defense Exhibit Number 571 admitted into evidence.)

8 BY MR. ISAACSON:

9 Q This is from June 2018 a Google Display Network  
10 leadership summit. And if I can ask you to look at  
11 page 13 -- well, that begins a section on market  
12 competition. And there's -- I won't go through all the  
13 slides here, but, for example, on page 15, it says: "Google  
14 comprises approximately 40 percent of the U.S. digital ad  
15 market." This is back in 2018.

16 How does this -- what does this say to you about  
17 how to look at an appropriate market in this case?

18 A So this is Google looking at a single -- this would be  
19 a single two-sided digital advertising market. So this --  
20 to make clear, this does not include the money going to the  
21 publishers the way the last chart did; this is money going  
22 to tech providers, but this is Google saying Google, here it  
23 says 40 percent of a single combined two-sided ad tech  
24 market.

25 Q And let's look at DTX 1875.

1 THE COURT: I'm sorry, 1875?

2 MR. ISAACSON: Yes.

3 MR. TEITELBAUM: No objection.

4 THE COURT: All right. It's in.

5 (Defense Exhibit Number 1875 admitted into evidence.)

6 BY MR. ISAACSON:

7 Q All right. This is using EMARKETER data. It's titled  
8 Google's Approximate Share in a Single Two-Sided Market for  
9 U.S. Display Advertising.

10 So now we're just talking about display  
11 advertising; correct?

12 A Correct.

13 Q Okay. And would you explain to the Court how these  
14 calculations are done?

15 A So this is EMARKETER data. Again, it's similar to the  
16 last chart where we saw Google as 10 percent. But as I  
17 said, that chart attributed dollars that went to the  
18 publisher to the publisher. This is saying let's focus just  
19 on tech. So the way we do that is we say -- we take any  
20 money that went to the publisher, and we associate it with  
21 the ad tech provider who facilitated that transaction.

22 So if Google -- if in a typical transaction  
23 there's \$1 that's spent and Google keeps 32 cents of it and  
24 68 cents goes to the publisher, for example, in the last  
25 chart we said Google gets the 32 percent -- 32 cents, and we

1 divided that by the total.

2 Here we say let's associate everything back to  
3 whoever was the tech provider who facilitated it all. So  
4 let's take that 68 cents and give that to Google as well,  
5 because it facilitated the full dollar. So when we do that  
6 and put all of it in terms of the ad tech providers, we say  
7 in this single two-sided U.S. display advertising tech  
8 market, Google has a 25 percent share, which has fallen from  
9 45 or 46 percent ten years earlier.

10 Q All right. And this is using once again the EMARKETER  
11 definition of display advertising; correct?

12 A Correct.

13 Q Now, plaintiffs have proposed three markets, and you've  
14 been talking about one single two-sided market.

15 Can't they all be potential markets?

16 A I mean, not valid ones in my opinion. Again, because  
17 if you break things down by these components, then you miss  
18 all the different ways that these paths compete.

19 I mean, one simple example I would use is if you  
20 think about the fact that -- if you associate ad servers  
21 just with publishers and say that's one piece, you miss the  
22 fact that if the ad server doesn't work as well, if its  
23 rules aren't as good, if it's too expensive, it might well  
24 be advertisers who say we don't want to work with publishers  
25 who use that ad server, we'll go work with Facebook.

1           So the only way you're going to see substitution  
2 on both sides and the full effect of those shifts in the  
3 prices is to look at things in combination and ask the  
4 question what paths are competing with other paths and how  
5 do people find -- if tech is not working as well, how do  
6 people find their way around it. That involves looking at  
7 choices on both sides and the full paths in combination, not  
8 piece by piece.

9       Q     All right. You talked at the beginning of your  
10 testimony about ad tech that's not in the plaintiffs'  
11 markets. Let's talk about header bidding.

12           Do plaintiffs' markets include header bidding ad  
13 tech?

14       A     No.

15       Q     And can we look at DTX 1898.

16           MR. TEITELBAUM: No objection.

17           THE COURT: All right. It's in.

18           (Defense Exhibit Number 1898 admitted into evidence.)

19           MR. ISAACSON: I'm sorry. This has been admitted  
20 before subject to me going through it with Dr. Israel.

21           THE COURT: So there's no objection, so it's in.

22           MR. ISAACSON: Yes. Yes. Yes. Yes.

23       BY MR. ISAACSON:

24       Q     This is the Percentage of DFP U.S. Indirect Web  
25 Impressions Won by Header Bidding from July 2018 to

1 December 2022.

2 Would you explain to the Court what the data is  
3 for this chart?

4 A Effectively this is DFP data. So we can go into DFP.  
5 There's been a lot of discussion already. You have the, you  
6 know, various auctions run in DFP, and you can see whether,  
7 you know, AdX won, whether a direct deal won, or whether a  
8 header bidding bidder won.

9 Q All right. And the numbers rise from just over  
10 25 percent to approximately 40 percent over this period from  
11 2018 to 2022?

12 A Yeah. So header bidding is continuing to compete and  
13 compete quite effectively to grow. So despite allegations  
14 made in the case, header bidding is doing quite well inside  
15 DFP. In fact, if you look in the recent years, header  
16 bidding wins more inside DFP than AdX does.

17 Q In fact, can publishers using DFP give access to every  
18 one of their impressions to Amazon and Prebid header  
19 bidding?

20 A Sure. That's been discussed in here. I mean,  
21 publishers can use inside DFP, have whatever exchanges they  
22 want bid through header bidding and give all access to  
23 header bidding. They don't even have to use AdX to do that;  
24 they could use DFP just entirely to run header bidding  
25 auctions.

1 Q In the case that gets occasionally technical, our least  
2 favorite term may be GAM log-level data.

3 But the -- is your chart, here does that use GAM  
4 log-level data?

5 A No. This is DFP data so -- from which you can see  
6 things like who won the impression, but you don't have --  
7 the GAM-level log-level data is this data just from  
8 June 2023 that gives you all the details on every auction,  
9 like who bid, what was their bid. It's auction by auction.

10 As you can imagine, that's massive data because  
11 it's every auction and there's billions of them. This is  
12 summarized more up to the monthly level and gives you, you  
13 know, who won.

14 Q All right. And what's the difference between this data  
15 set and the GAM log-level data set with respect to your  
16 ability to identify header bidding?

17 A This data set uses what Google does in the ordinary  
18 course of business to identify header bidding. It's still  
19 not quite perfect, but it's close. So Google doesn't  
20 necessarily know it was header bidding. Remember, the way  
21 header bidding works, it comes in through one of these  
22 remnant line items and Google has to figure out was that a  
23 header bidding win or not. Increasingly they are. But  
24 Google does things like look for the way those line items  
25 are configured, look at the name in the line item, and it

1 has an ordinary course method to identify header bidding.  
2 This uses that, so it identifies most of them. It might  
3 still be conservatively low, but it identifies most of them.

4 The GAM log-level data doesn't have that. In very  
5 few cases in the GAM log-level data can you tell it was  
6 header bidding.

7 Q To what extent, in your opinion, is header bidding a  
8 competitor to Google's ad tech?

9 A I think it's an extremely important competitor. Right.  
10 I mean, it lets -- I mean, it's been discussed a lot in  
11 here. It's the way -- it's one way the market is competing  
12 vibrantly. It lets publishers sell to whoever they want,  
13 not AdX, using -- even if they're within DFP. It lets  
14 advertisers bid into auctions that are run in DFP. It  
15 really is a competitor for Google's ad tech entirely.

16 Q And from your review, have you seen Google trying to  
17 compete against header bidding?

18 A Certainly. Google competed with its Open Bidding  
19 options. You know, header bidding is a competitor for the  
20 ad tech for running and winning these auctions. Google is  
21 trying to compete with that. But we see here that header  
22 bidding is doing quite well, growing. And as I said, even  
23 within DFP now, I believe currently you would see more  
24 header bidding wins than AdX wins.

25 Q And given that DFP gives access to every impression --

1 if a publisher wants to, a publisher could give, using DFP,  
2 access to every one of their impressions to Amazon in Prebid  
3 header bidding. What does that tell you about the issue of  
4 anticompetitive harm in this case?

5 A Given the success -- the ongoing success of market  
6 competition through header bidding, I mean, that's among the  
7 most important facts to me in saying there's not  
8 anticompetitive harm. Because header bidding is inside DFP,  
9 but it's other exchanges, other buy-side tools are competing  
10 and winning actively for these auctions. Right. That means  
11 other exchanges and other buy-side tools can run and win, it  
12 means publishers can give access to whoever they want, they  
13 don't have to give access to AdX. This is active  
14 competition for ad tech. A lot of it's happening here, it's  
15 happening inside DFP, but it's active competition with  
16 Google's ad tech.

17 Q Another topic is supply path optimization.

18 Could you explain what supply path optimization  
19 is?

20 A Supply path optimization is trying to -- it's basically  
21 jumping over or combining some of the steps in the ad tech  
22 path, as plaintiffs have described it. So it might be a  
23 buy-side tool, it doesn't go through an exchange, it bids  
24 directly into an ad server, or an exchange goes directly to  
25 advertisers, doesn't work with buy-side tools.



1 Q And how does supply path optimization in this industry  
2 impact your analysis of plaintiffs' market definitions?

3 A I mean, it's a very good example of why I would say you  
4 need to look at path-on-path competition, not components,  
5 because components are going to miss supply chain  
6 optimization. If a buy-side tool bids directly and doesn't  
7 go through an exchange, that's a perfectly valid path, but  
8 it's not captured by the components.

9 Q And what firms offer supply path optimizations?

10 A I mean, one I would note from the start is that I'd say  
11 any sort of in-house ad tech, like a Facebook, is basically  
12 supply path optimization because it's doing everything  
13 in-house in one form of tech.

14 Beyond that, though, you know, examples are that  
15 we've heard about, The Trade Desk has a product called Open  
16 Path, I believe, which is letting people go directly -- you  
17 know, bid directly into auctions without going through an  
18 exchange. Criteo has a product called Direct Bidder, I  
19 believe, that allows people to do the same thing. I think  
20 Yahoo, within the last year, has a similar offering that  
21 lets people bid -- use a buy-side tool to skip an exchange.

22 Q And is the Criteo Direct Bidder been around since 2017?

23 A That sounds right.

24 Q Okay. And when you're talking about the tech within,  
25 say, Meta or Amazon, in order to place -- in order for an ad

1 to be served on Meta, do they have to have technology -- do  
2 they have to have server technology to do that?

3 A Yes.

4 Q Okay. And when they run auctions, do they have to have  
5 technology to run the auctions?

6 A Yes.

7 Q And do they have to have bidding tools for the  
8 advertisers to place ads on their side?

9 A Yeah. They have -- the Facebook Audience Network is a  
10 bidding tool.

11 Q All right. And so when you're talking about TikTok and  
12 Amazon and Facebook when they're doing -- selling  
13 proprietary ads, you're talking about encompassing all of  
14 that technology?

15 A Yeah. All of the ad tech is used. So they're a  
16 publisher with their own ad tech, and effectively they have  
17 engaged in supply path optimization by integrating that into  
18 one integrated stack. It doesn't fit into the component  
19 markets, but it's -- part of what makes them so strong is  
20 that tech that they offer.

21 Q All right. And to what extent do plaintiffs ignore  
22 supply path optimization tools that bypass other tools in  
23 the market?

24 MR. TEITELBAUM: Objection, Your Honor. I think  
25 we've geared into some significant leading at this point.

1 THE COURT: I don't think that was that leading.  
2 I'm going to overrule the objection.

3 THE WITNESS: So I would say that plaintiffs'  
4 market definitions just ignore the whole idea of supply path  
5 optimization. Some of these players are in some of their  
6 markets, but by component, but they're ignoring the fact  
7 that these are paths that don't fit into the buckets as they  
8 define them.

9 BY MR. ISAACSON:

10 Q So what firms offer tools that bypass advertiser buying  
11 tools?

12 A So this would be exchanges connecting directly with  
13 advertisers. So examples would be PubMatic and Magnite.

14 Q Okay. Let's talk about geographic market.

15 MR. ISAACSON: Or would you like me to do that?

16 THE COURT: I think we'll take the break.

17 MR. ISAACSON: Okay.

18 THE COURT: All right. We're on recess until  
19 11:30.

20 (A brief recess was taken.)

21 THE COURT: All right. Go ahead, Mr. Isaacson.

22 MR. ISAACSON: One thing I neglected to say, Your  
23 Honor, is I'm joined at counsel table by Erica Spevack.

24 THE COURT: Good morning.

25 MS. SPEVACK: Good morning.

1 BY MR. ISAACSON:

2 Q Could we look at DTX 1877.

3 THE COURT: Any objection?

4 MR. TEITELBAUM: No objection.

5 THE COURT: It's in.

6 (Defense Exhibit Number 1877 admitted into evidence.)

7 BY MR. ISAACSON:

8 Q So this is titled AdX and Google Ad Share of DFP  
9 Indirect Web Display Non-Video Impressions, 2019 to 2022.

10 So this is -- you're looking at the web for -- and  
11 for display ad impressions; is that right?

12 A Correct. And the indirect web display non-video is the  
13 attempt to match the way that plaintiffs have defined the  
14 market.

15 Q Is this drawn from DFP data?

16 A Correct. So these are impressions -- non-video  
17 impressions sold inside DFP.

18 Q And so you have, for AdX and Google Ads, rest of world  
19 and United States percentages there.

20 When it says rest of the world, are you at  
21 least -- almost all excluding China?

22 A Yeah. I think it includes [sic] almost all of China.  
23 There may be a few observations that couldn't be excluded,  
24 but basically it excludes China.

25 Q Okay. So what does this chart show in your opinion

1 about the -- what should be the appropriate geographic  
2 market in this case?

3 A If you take a step back there, the question of  
4 geographic market to me is not abstract; the question should  
5 be what best informs competitive analysis, what market is  
6 most useful in analyzing competition. And what this tells  
7 me is the shares are quite different between the U.S. and  
8 the rest of the world. But we see these lower shares in the  
9 U.S. that accurately reflect shares in the U.S. They  
10 reflect the impressions, the competitive options in the U.S.

11 We see higher shares in the rest of the world,  
12 which may say some competitors are weaker or there's  
13 different competition in the rest of the world. But the way  
14 I would always look at it, that just means the rest of the  
15 world is different. We're trying to analyze competition in  
16 the U.S., we should analyze competition in the U.S. and use  
17 the shares in the U.S.

18 So this leads me to say we should have separate  
19 geographic markets by -- certainly for the U.S. versus rest  
20 of the world because the competitive conditions are  
21 different, and we'll get a better analysis if we focus on  
22 U.S.-specific data.

23 Q And what's your opinion of what's the appropriate  
24 geographic market to consider for this case?

25 A I would look at the United States.

1 Q And are there any other factors that inform your  
2 opinion about why the United States would be the appropriate  
3 geographic market?

4 A I mean, it's -- there are reasons that make it make  
5 sense that these shares look different. If you think about  
6 ad tech and what it has to do, it's going to be different  
7 where there's different languages. So there are other  
8 countries -- non-English-speaking countries are going to  
9 have different providers in them, and there may be some  
10 languages that don't have as many people that speak them  
11 that maybe not every firm is going to invest in serving, so  
12 you may have fewer competitors.

13 There's also different regulations. Europe, for  
14 example, has GDPR, a data regulation that not every provider  
15 may be able to deal with. So it's natural to me that you  
16 may see some other countries that have somewhat higher  
17 shares, but that fact doesn't say anything about competition  
18 in the U.S.

19 Q All right. The -- you were here this morning when  
20 there was a discussion of the P&L statements of Google.

21 Can you please explain the difference between  
22 economic profits and accounting profits or P&L profits?

23 A Sure.

24 So it's -- a long big issue in economics is that  
25 accounting profits don't match economic profits, and

1 economic profits are what really tell economists about, you  
2 know, how well a firm is doing from an economic point of  
3 view that might inform questions like monopoly power.

4           The basic difference really is that accounting  
5 profits tell you kind of the ins and the outs in the cash;  
6 they don't tell you about how much -- how many resources,  
7 how much capital was tied up to generate those profits. So  
8 investors invest money in the company, the company has this  
9 pool of capital that it uses to try to make its accounting  
10 profits.

11           Economists would say -- if you just tell them --  
12 accounting profits, that doesn't really tell me much because  
13 it's a lot different if I tied up \$10 billion to make that  
14 profit than if I only tied up \$100 to make that profit.

15           So economic profits take the accounting profits,  
16 basically, and subtract off the cost, the value of that  
17 capital that was tied up. So economic profits are lower,  
18 generally, than accounting profits because they're basically  
19 accounting profits minus the cost of capital.

20 Q     And the cost of capital is a way of measuring  
21 opportunity costs in this situation?

22 A     Yes. So, again, it's saying you generated X dollars in  
23 your operating profits, but your investors gave you  
24 \$100 million to do it. \$100 million could have been used in  
25 some other way, so is the return you're generating really

1     worth it.

2     Q     All right. And so the Court -- I won't do this -- go  
3     through these again -- was pointed to in what years it was  
4     positive, what years it was negative, et cetera, and those  
5     are on P&Ls.

6             If you were looking at those taken into account  
7     opportunity costs or economic profits, what would those  
8     numbers look like?

9     A     I looked at this in my report, too. They would all be  
10    lower. You would deduct off the cost of capital. So what  
11    that means is for those years, 2015 through 2017 where we  
12    saw where the operating return was negative, then we have a  
13    conclusion we can reach that the economic profit would be  
14    even more negative.

15            So from that, I can conclude that for those years  
16    when there's allegations that Google was a monopolist, it  
17    doesn't look like it. They're not generating any economic  
18    profit.

19            For the later years when they were positive, I  
20    can't really say because I don't have -- we don't have the  
21    economic profit numbers.

22            So what I can conclude is there's several years  
23    during the alleged monopolization period when Google was  
24    earning negative returns, which, to me, is inconsistent with  
25    monopoly power.



1 THE COURT: Are there ever times when the economic  
2 profits would be higher than the P&L profits, the P&L?

3 THE WITNESS: Not that I -- I mean, not that I can  
4 think of.

5 There are times that the P&L profits are --  
6 various forms of P&L profits are just reporting something  
7 totally different and they're not really comparable, but if  
8 you have the right bottom line P&L profit, which is how much  
9 we made on a full all-in operating business, then I would  
10 always teach my students economic profit is just that much  
11 accounting profit minus the value of the capital you used to  
12 accrue it.

13 THE COURT: So it's always going to be lower or  
14 possibly the same, but never above?

15 THE WITNESS: Lower. Because -- unless you're  
16 somehow operating with no money, it's always going to be  
17 lower.

18 THE COURT: Yeah.

19 BY MR. ISAACSON:

20 Q All right. And did the profits that you were looking  
21 at earlier today and have looked at in your study, were  
22 those -- did those stand out to you just in terms of what  
23 you see for industry profits across the United States?

24 A I wouldn't say they stood out. What stood out to me  
25 was --

1 MR. TEITELBAUM: Objection to leading and vague.

2 THE COURT: Sustained.

3 BY MR. ISAACSON:

4 Q All right. So how did those profits compare to what  
5 you have seen in terms of margins from industry to industry  
6 in the United States?

7 MR. TEITELBAUM: Objection as to beyond the scope  
8 of expert report and also leading.

9 MR. ISAACSON: This is paragraph 578 of his expert  
10 report.

11 THE COURT: I'm going to overrule the objection.  
12 You can answer the question.

13 MR. ISAACSON: I'm sorry. Footnote 587,  
14 paragraph 427.

15 THE WITNESS: I mean, I can just say those years  
16 when they're negative, it stands out to me that they're  
17 negative and the economic profits would be even lower.  
18 That's not what I would see generally in a situation where  
19 there's allegations of monopoly.

20 BY MR. ISAACSON:

21 Q All right. Let's talk -- so we've talked about what  
22 you think is the appropriate way to look at these markets as  
23 one single two-sided markets, but let's now talk about the  
24 plaintiffs' individual three markets.

25 Notwithstanding your opinions, you did an

1 evaluation of each of those three markets individually?

2 A Yes. So my overall opinion is it should be a single  
3 market, but I did say what if I considered them separately  
4 using the standard tools of economics.

5 Q And if you assumed those three markets are valid, what  
6 in your opinion is -- as to whether they are two-sided  
7 markets?

8 A Even if I looked at them separately, I would still  
9 evaluate them as two-sided. Every one of them is just a  
10 step along the way that's connecting demand to a publisher  
11 reaching an impression.

12 Q All right. Let's talk about publisher ad servers.

13 Did Professor Lee conduct a hypothetical  
14 monopolist test, an HMT, for publisher ad servers?

15 A Not a valid one, in my opinion.

16 Q Would you explain why?

17 A What I heard Professor Lee say -- and, again, the HMT  
18 is a method economists do use to decide if a market  
19 definition is valid.

20 But I heard Professor Lee say the way he tried to  
21 do that was to compare or -- yeah, to compare the fees that  
22 were charged in the market relative to what he called the  
23 competitive level. And I think he said because he claimed  
24 that they were higher than the competitive level, that  
25 indicated that would pass the HMT.

1 Q So why isn't a comparison to a hypothetical competitive  
2 price level the relevant standard?

3 A There's really two reasons. The first thing is the  
4 competitive level as he's explicitly defined it comes out of  
5 a textbook model called perfect competition in which price  
6 would just equal marginal cost, which means the price of the  
7 product would just equal the cost of selling one more unit  
8 of the product.

9 In this industry, that's very low. In an industry  
10 like this that has big fixed end capital costs, firms would  
11 never set price at marginal cost. And so the price is  
12 always going to be above that competitive level as defined.  
13 And so you would say any market passes. If you said my  
14 market is each individual firm, you could then go look at  
15 its price and say, look, that's above the competitive level  
16 and say I have a market.

17 So that's really the first reason that comparison  
18 doesn't work given the competitive level is never going to  
19 be achieved or that definition of the competitive level is  
20 never going to be achieved.

21 And the second what you really need to do is still  
22 do the hypothetical monopolist test, which is in a conduct  
23 case, compare the alleged market in a situation where it's  
24 not alleged to be a monopoly to one where it is alleged to  
25 be a monopoly and see if the prices are higher. If the

1 prices are significantly higher when it is alleged to be a  
2 monopoly, then maybe you have evidence that it passes the  
3 HMT. But if they're not, then it fails the HMT.

4 Q With those comparisons, are those sometimes called  
5 real-world HMTs?

6 A Yeah. So that would be an example of a direct or  
7 real-world application of the HMT. In other cases, you  
8 don't have data from two different situations, and so  
9 economists have to use models to try to figure out would the  
10 prices be higher in the two states of the world. But if you  
11 actually see prices with and without monopolization, then  
12 you can directly compare and ask is the price higher.

13 Q Did you see any modeling like that from Professor Lee?

14 A No.

15 Q What about what Professor Lee says is direct evidence  
16 that informs market definition and market power? Is that an  
17 HMT?

18 A No, not what he did. Again, the direct evidence that I  
19 saw was either this discussion of prices and how they  
20 compare to the competitive level, which I've already  
21 discussed, or he also mentioned certain actions by Google  
22 that he said decreased quality below the competitive level.  
23 That has even more of the same problem. The competitive  
24 level is not well defined there, and we haven't done a  
25 comparison of what things look like with and without the

1 alleged monopolization.

2 Q So, again, we're talking about publisher ad servers  
3 now.

4 Does the evidence of DFP, that publisher ad  
5 servers, does the evidence of those fees in this case  
6 constitute direct evidence supporting a market or monopoly  
7 power?

8 A No. In fact, the evidence on DFP fees to me is quite  
9 telling in the other way as far as doing this  
10 component-specific market, because, you know, the allegation  
11 is that DFP shares were quite high, and yet DFP prices are  
12 very low and falling.

13 Q The -- if we can -- oh, does DFP charge fees to all of  
14 its publisher users?

15 A No. In fact, you have to reach a certain level, I  
16 think it's 90 million impressions per year or something like  
17 that in order to be charged fees. Most publishers don't  
18 reach that, so something like 85 to 90 percent are.

19 Q Let me show you DTX 1954 so we can get that number.

20 THE COURT: Is that already in, 1954?

21 MR. ISAACSON: No, it is not in.

22 THE COURT: Are you moving it in?

23 MR. ISAACSON: Yes.

24 MR. TEITELBAUM: No objection.

25 THE COURT: All right. It's in.

1 (Defense Exhibit Number 1954 admitted into evidence.)

2 BY MR. ISAACSON:

3 Q All right. This is the percentage of U.S. DFP  
4 publishers paying ad serving fees, and it has 13.7 percent  
5 paying ad serving fees and 86.3 percent not paying it.

6 So where is this data from?

7 A These are directly from DFP as far as what publishers  
8 are and are not paying fees.

9 Q All right. So I interrupted you so that you could say  
10 the correct number. Maybe you wanted to finish what you  
11 were saying.

12 A I said 85 to 90, so, fortunately, I had the range  
13 right.

14 So 86.3 percent of the publishers are small enough  
15 they actually pay zero. So the vast majority of the  
16 publishers are paying nothing for DFP.

17 Q Can we look at DTX 1912.

18 THE COURT: Any objection?

19 MR. TEITELBAUM: No objection.

20 THE COURT: All right. It's in.

21 (Defense Exhibit Number 1912 admitted into evidence.)

22 BY MR. ISAACSON:

23 Q This is DFP rate cards from 2006 to 2022. The tallest  
24 bar, the gray bar is 2006. The green bar in the middle of  
25 each thing is 2010. And the light blue bar, the smallest

1 bar, is 2022. This is fee per thousand impressions across  
2 volume tiers at the bottom.

3 Would you explain what this chart is showing?

4 A Yeah. These are rate cards, meaning the actual listed  
5 prices for DFP. This is just among the publishers who pay.  
6 So obviously it's just covering those who pay. And then  
7 it's -- for those publishers, it's indicating what they pay.  
8 So if you look all the way across from left to right, you  
9 can see as you have more impressions, you pay less. It's  
10 like a volume discount. But probably more importantly for  
11 my purposes here, within each volume tier, you see the  
12 prices are declining over time.

13 Q Can we look at DTX 1977, which is a table from your  
14 report.

15 THE COURT: Any objection?

16 MR. TEITELBAUM: No, Your Honor.

17 THE COURT: It's in.

18 (Defense Exhibit Number 1977 admitted into evidence.)

19 BY MR. ISAACSON:

20 Q All right. This is titled DFP, AdX and Google Ads  
21 Average Prices Over Time. Right now we're just talking  
22 about DFP. So the first column has year, and then it says  
23 DFP thousand dollars build units.

24 Could you explain what that is?

25 A The DFP prices would be charged basically per thousand



1 impressions. So this is the price -- this is the average  
2 price in the data for -- of DFP across the publishers who  
3 pay per thousand impressions.

4 Q And what trend are you seeing with regard to those  
5 prices?

6 A Like we saw on the rate cards, they're declining. And  
7 I should note, these aren't adjusted for inflation, so if  
8 you adjusted for inflation over time, they would be  
9 declining even faster.

10 Q All right. And then in the third column, did you  
11 convert the dollar figures into percentages so that we're  
12 going to be able to compare those to take rates?

13 A Yeah. I mean, the percentage depends on the size -- or  
14 the dollars in the impression, but using a \$2 CPM  
15 impression, I converted them into percentages. So you can  
16 see it fell from 1.7 percent to 1.3 percent.

17 Q All right. And do you have examples of publisher ad  
18 servers who -- in providing services to third parties, that  
19 have been ongoing since back to 2006?

20 A Equativ.

21 Q But ad servers have exited the ad tech space; haven't  
22 they?

23 A Yeah. I think there's been a few exits since over this  
24 time.

25 Q All right. So what does the evidence of that exit tell

1 you about a real-world HMT?

2 A So if you were to apply the logic I gave earlier, you  
3 have an earlier point in time when there were more ad server  
4 competitors, you have today when there's been exits and an  
5 allegation that Google is a monopolist, has monopoly power,  
6 the HMT would say if this market is right and it's moved for  
7 more competitors to an alleged monopoly, prices should have  
8 gone up, but they've gone down. So that would say this  
9 proposed market fails the HMT. It must be missing some sort  
10 of competition that's causing those prices to fall.

11 Q All right. So let's just talk about the options open  
12 to publishers, not the two-sided market with respect to  
13 publisher ad servers.

14 How can web publishers substitute to ad servers  
15 for apps?

16 A Right.

17 So there definitely are different and more options  
18 for apps. And so if I'm a publisher, say I'm the New York  
19 Times or a smaller publisher even, today many of them,  
20 probably most of them, have apps as well. And they can  
21 shift more of their content to apps, they can encourage  
22 their users to go to the apps, they can -- I mean, generally  
23 they can try to shift their focus from the web to the app,  
24 at least their focus for where they're putting much of their  
25 content and where they're encouraging their users to go.

1 Q And from your investigation, what are publishers doing  
2 to move users to apps and away from websites?

3 A I mean, there's lots of examples from -- I mean, nearly  
4 every publisher -- I see it in my day-to-day life, too.  
5 They offer you incentives to go to the app. If you go to  
6 the website, we recently went to PayPal, it says wouldn't  
7 you rather use the app. I think Chick-fil-A has offered  
8 free sandwiches if you use the app.

9 So generally, again, for various reasons, because  
10 they find the monetization, they find the performance better  
11 on the app, they offer incentives and encourage people to go  
12 to the app.

13 Q And amongst the major publishers of the world, how many  
14 are using apps as well as web content?

15 A I mean, I don't have -- I don't recall an exact count,  
16 but the vast majority of major publishers today have apps.

17 Q What does the fact that web publishers can shift  
18 content to their apps and push users to their apps tell you  
19 about whether that can strain prices for publisher ad  
20 servers in this case?

21 A Yeah. So it's a way that publishers can shift more of  
22 the impressions they're selling, more of their advertising  
23 business to the app.

24 So if it were the case that they said Google is  
25 acting in a way I don't like on DFP, it's not profitable,

1 then they can say, well, that's one reason why I might  
2 prefer to be on an app or I can use a different app ad  
3 server. Again, the reason they're moving people to the apps  
4 is because they find them a better, more profitable way in  
5 many cases to run the business, and one example of that  
6 would be to avoid practices by an ad server they don't like  
7 on the website.

8 Q And you discussed before the issue of some substitution  
9 versus 100 percent substitution.

10 How does that fit here?

11 A The government I think has said these guys have  
12 websites and they're going to run ads on their websites.  
13 And I'm not denying that at all. I'm not saying they shift  
14 entirely to the app.

15 The point is, they can shift more volume to the  
16 app. They can do exactly this behavior where they encourage  
17 people to go to the app, they can put more of their articles  
18 on the app, so more of their ad business is on the app. And  
19 that's substitution. That means if I'm Google and I  
20 don't -- you know, I don't treat DFPs as well, more and more  
21 of the impressions are going to go to the app.

22 And again, when that happens, that's entirely  
23 different ad tech. Right. So Google is not going to have  
24 those people in the web universe where they've alleged to be  
25 a monopolist.

1 THE COURT: But for very small companies, don't  
2 you still have to have some in-house technology or  
3 technologists who could set up the app for you?

4 THE WITNESS: You would have to set up an app.  
5 There are third parties who set up an app. And I don't want  
6 to get beyond -- I would agree there has to be some  
7 technology to set up an app. I think it's similar you have  
8 to have technology to set up a web page. So I would agree  
9 that if there are publishers who don't have an app, then the  
10 step would be set up an app. There are consultants who do  
11 that.

12 THE COURT: But it's a cost.

13 THE WITNESS: If you don't have an app at all,  
14 then it would be a cost to set one up. I don't disagree  
15 with that. But if you have an app, then the decision --  
16 it's still something you have to do, but the decision is to  
17 try to shift your focus to that. I think it's fair to say  
18 that this would be an option for many publishers.

19 I mean, I think an important point there, just  
20 quickly, is as long as a lot of publishers have this option,  
21 then when Google is thinking about what do I do to DFP,  
22 Google has to worry about those -- it's still a constraint  
23 on Google because they have to worry about the publishers  
24 who would switch.

25 So I take the point that not every publisher can

1 necessarily do it, but when Google thinks about what's the  
2 cost to not behaving well, they have to worry about the  
3 publishers who could.

4 BY MR. ISAACSON:

5 Q All right. In-house ad servers. Plaintiffs do not  
6 include in-house ad servers in the market; correct?

7 A Correct.

8 Q Okay. And what is an in-house ad server, just to be  
9 clear?

10 A It's an ad server that -- generally a large company  
11 here, but a company runs its own ad server.

12 Q Okay. What are some social media and retail companies  
13 that have built their own in-house ad servers?

14 A Facebook and Amazon, quick examples. We've talked  
15 about this already. They have their own ad tech, including  
16 their own ad server.

17 Q And are there examples of firms that have switched away  
18 from DFP to their own ad servers?

19 A So Amazon is one example of a company that used to be a  
20 DFP client that took it in house.

21 Q Is that about 2015?

22 A That sounds right.

23 Other examples are Reddit, Snapchat, and I'm  
24 forgetting the last one, but those are the ones I can think  
25 of.

1 Q All right. And when those publishers switch from DFP  
2 to their own in-house ad servers, they moved from being in  
3 this plaintiffs' market to outside the market. That's the  
4 way this works?

5 A Right. They were buyers inside the market, and the way  
6 plaintiffs have defined things, they would have then become  
7 outside the market.

8 Q And how do these in-house ad servers from major  
9 players, what constraint do they have on DFP's asserted  
10 monopoly power?

11 A I mean, this is an even more extreme example of what I  
12 was discussing with Your Honor.

13 I'm not saying that every company is going to run  
14 an in-house ad server at all, but if you think about Google  
15 operating its business and what competitively constrains it  
16 and what rules it applies to DFP and how it operates DFP,  
17 the possibility that it's going to lose an Amazon or a  
18 Reddit or a Snapchat or a TikTok or, you know, any of those,  
19 that's an enormous number of impressions.

20 So when Google is thinking from its side what  
21 constrains my behavior in terms of DFP, the fact that you  
22 could lose companies that make up so much of the business --  
23 right, the business is about matching to impressions, and  
24 the largest companies can take so many impressions away,  
25 that's a big constraint, in my view, on Google in terms of

1 how it operates. It has to make DFP good enough that it  
2 doesn't keep losing these guys to self-service.

3 Q All right. I would like to look at DTX 1872, which is  
4 redacted.

5 MR. ISAACSON: Off the screen, Matt. Redacted.  
6 Oh, this is the redacted version. Oh, thank you.

7 MR. TEITELBAUM: No objection.

8 THE COURT: It's in.

9 (Defense Exhibit Number 1872 admitted into evidence.)

10 BY MR. ISAACSON:

11 Q So this is Google's publisher ad server share,  
12 including selected in-house ad servers by approximate U.S.  
13 ad spending. And at the bottom is Google, and at the top is  
14 other.

15 And so the selected in-house ad servers are some  
16 of the names that are redacted there, but the point is that  
17 at the top, there's a group of in-house publisher ad  
18 servers; is that right?

19 A Yes.

20 Q And these are major publisher -- these are major  
21 companies; right?

22 A Yeah. The sort I was discussing.

23 Q Right. And -- so but it's not all publisher ad  
24 servers, this is not a representation of all the impressions  
25 in all the in-house publisher ad servers; correct?



1 A No. This is -- everything for Google, and then it has  
2 a set on which I had access to third-party data that would  
3 give their impressions.

4 Q All right. So what does this chart show with respect  
5 to the impact of plaintiffs' exclusion of in-house ad  
6 servers from their market?

7 A Again, it's making the point I made before that these  
8 guys are taking them in-house, they're providing them to  
9 themselves. But even just this set that has taken -- have  
10 taken them in-house account for much more ad spending than  
11 is on DFP.

12 So the -- again, not everyone can do this, but the  
13 set of publishers who can discipline Google greatly in the  
14 language economists use. Google has already lost enormous  
15 amounts, the majority of the spending away from DFP because  
16 people have switched away.

17 Q All right. Let's look at DTX 1873.

18 THE COURT: Any objection?

19 MR. TEITELBAUM: No objection.

20 THE COURT: Okay it's in.

21 (Defense Exhibit Number 1873 admitted into evidence.)

22 BY MR. ISAACSON:

23 Q So this is titled Google's Share Amongst Publisher Ad  
24 Servers for all U.S. Display Advertising, 2019 to 2022.

25 So when it refers to display advertising, this

1 would again refer to the EMARKETER definition of display  
2 advertising?

3 A That's correct.

4 Q Okay. And would you explain how this chart was  
5 calculated?

6 A Sure.

7 So this chart uses EMARKETER spending data as the  
8 denominator. So, again, it's all display advertising.

9 Q So these are all display ads that need to be served by  
10 technology?

11 A Right. Every display ad ultimately is served by  
12 something. It has to be -- that's the way digital and  
13 display ads work. So it has to be served.

14 So this is asking of all the spending on display  
15 ads that have to be served, what percentage of that spending  
16 is served by DFP, by a Google server. And you can see the  
17 number is 30 percent. So out of all the display spending,  
18 if we include social and video and connected TV and app and  
19 so on, out of all that spending, only 30 percent is running  
20 through Google.

21 And I should clarify what I said. This is -- it  
22 includes Google's DFP, it also includes Google's own. So  
23 the Google number is what it's serving through DFP, what  
24 it's serving through, say, AdMob and AdSense, and what it's  
25 serving itself like on YouTube. So everything that Google

1 serves is less than one-third of the total industry.

2 Q So based on your review of the evidence for publisher  
3 ad servers, what is your opinion about whether Google has  
4 monopoly power?

5 A Yeah. I conclude it does not. These shares to me are  
6 quite telling. Google is only serving less than a third of  
7 the total ad server -- of the total display market.

8 Again -- and I think the shares alone tell you, I  
9 think that the threat from going to apps, plus the threat  
10 from going in-house, plus the two-sided threat that if the  
11 ad server doesn't work well, advertisers might find that an  
12 unattractive place to buy impressions. All of those things  
13 lead to Google actually facing substantial competition from  
14 those various options, as reflected in these low shares.

15 Q Okay. Let's talk about ad exchanges. The ad exchange  
16 market offered by plaintiffs.

17 Did Professor Lee conduct a hypothetical  
18 monopolist test for ad exchanges?

19 A Again, not a valid one.

20 Q And would you just explain that? I think you explained  
21 that before, but explain why that would apply here.

22 A It's the same point. He indicated that he was  
23 comparing -- he would say the prices were above a  
24 competitive level and that would provide direct support for  
25 the market, but for all the reasons I explained before,

1 that's not a valid comparison or a valid form of the test.

2 Q What about Professor Lee's direct evidence here, what  
3 did he offer?

4 A Again, it was a combination of saying the fees were  
5 high and saying there were -- some of the conduct here  
6 indicated that Google had degraded quality below the  
7 competitive level, but that's still the same point. That  
8 competitive level is not well defined as a comparison, and  
9 it's not doing the test where the test is are prices higher  
10 with an alleged monopoly than in a non-monopoly situation.

11 Q Can we look at DTX 1888.

12 THE COURT: Any objection?

13 MR. TEITELBAUM: No objection.

14 THE COURT: Okay. 1888 is in.

15 (Defense Exhibit Number 1888 admitted into evidence.)

16 BY MR. ISAACSON:

17 Q So this is AdX fee trends from 2014 to the end of 2022.  
18 There's two lines on this chart, one is for Open Auction,  
19 and the lower line is for all transaction types.

20 This is Google data; is that right?

21 A Correct. This is AdX data.

22 Q Okay. Would you explain those two lines?

23 A The 20 percent number that's been said I think in the  
24 trial, that's what Google charges for Open Auctions. So for  
25 like the -- an auction run on AdX.

1           The all transaction types brings in other  
2 transactions that run through AdX. Most importantly, AdX  
3 has -- facilitates a lot of programmatic direct  
4 transactions, where it's not an auction, it's actually a  
5 direct deal, just runs -- it just facilitated through AdX.  
6 Again, that would not be in plaintiffs' market.

7           So what you're seeing is that the -- the overall  
8 average is pulled down by the fact that people are more and  
9 more over time using that direct option.

10       Q     All right. Let's look at DTX 1977. This was admitted  
11 earlier. And we talked about DFP. In the middle there's a  
12 column for AdX Open Auction.

13           So that's -- AdX Open Auction, you're using the  
14 upper line from the previous chart; right?

15       A     Yes.

16       Q     And so it's 20 percent for these years.

17           What is this -- how do these price trends relate  
18 to the issue of doing real-world hypothetical monopolist  
19 test for ad exchange?

20       A     I mean, it's been 20 percent throughout. In fact, the  
21 20 percent goes back to when DoubleClick owned AdX when  
22 Google hadn't even acquired it. So we've had a price at  
23 20 percent from even before Google had AdX to today when  
24 there's an allegation that it's now a monopolist.

25           So it's just like I said for ad servers, you see

1 an alleged monopoly situation in the market, and you see a  
2 time when DoubleClick had it and it was described as  
3 nascent, and yet the price has not gone up.

4 According to the HMT, if you move from  
5 competitive -- which I would say nascent is not a  
6 monopoly -- to a monopoly situation, the HMT would say  
7 prices should go up. They have not. So it fails this  
8 version of the HMT.

9 Q All right. Could we look at DTX 1863.

10 MR. TEITELBAUM: No objection.

11 THE COURT: All right. It's in.

12 (Defense Exhibit Number 1863 admitted into evidence.)

13 BY MR. ISAACSON:

14 Q All right. This chart is titled Professor Lee's  
15 Exchange Share Estimates Indicate Significant Competition.  
16 The upper red line is third-party exchanges, and the lower  
17 line in blue is AdX.

18 What -- where did you get the data for this chart?

19 A This is data from Professor Lee's report. I compute  
20 very similar numbers myself, but he had this chart going  
21 month by month -- or quarter by quarter, I think -- maybe  
22 month by month over time, so I used his data.

23 Q So, to be clear, this is not how you would calculate  
24 market shares, but this is how Professor Lee calculated  
25 shares for ad exchanges for open-web display advertising?

1 A Correct. I would, as we discussed, include many more  
2 offerings and two-sided and so on. But this is a  
3 calculation of what the share would look like if you defined  
4 the market as just ad exchanges and just for open web,  
5 indirect and non-video.

6 Q What does Professor Lee's data tell you about whether  
7 AdX has monopoly power?

8 A It tells me that even in the market as defined, again,  
9 which I disagree with and think it's leaving out even much  
10 more competition. But even in the market as defined, AdX's  
11 share has fallen to, you know, close to 30 percent over  
12 time. So that's not consistent with AdX being -- you know,  
13 the fact that it's so low and has fallen doesn't support a  
14 claim that AdX has monopoly power.

15 Q Okay. With respect to the upper line, the other  
16 third-party exchanges, it's been said that those other  
17 exchanges are smaller than AdX.

18 How does that affect your opinion on this issue of  
19 monopoly power?

20 A It doesn't. If anything, it reinforces it.  
21 Competition economics generally finds markets with lots of  
22 small competitors to be quite competitive markets. There's  
23 lots of small players. It indicates that small players can  
24 continue to compete. You know, they're not somehow unable  
25 to because they're too small.

1           So I would call that a situation with vibrant  
2 competition where lots of small players can compete, they  
3 can bid into header bidding, and AdX faces all of that  
4 competition.

5       Q     Are there new exchanges that have joined the industry  
6 since 2020?

7       A     I think one example is Vox. I think that is pulled  
8 together as some publisher inventory and formed an exchange.

9       Q     All right. Can we look at DTX 1904.

10           THE COURT: Any objection?

11           MR. TEITELBAUM: No objection.

12           THE COURT: It's in.

13           (Defense Exhibit Number 1904 admitted into evidence.)

14       BY MR. ISAACSON:

15       Q     All right. Now this is titled DFP Publisher  
16 Multi-Homing Across Exchanges. And 67 percent are four or  
17 more, 18 percent are three or more, the pale color is two or  
18 more and then gray is 6 -- 6 percent is one.

19           Would you explain -- is this DFP data?

20       A     Correct. These are DFP data reflecting how many  
21 exchanges the publisher -- the publishers in DFP are using.

22       Q     And what does this tell you about the issue of  
23 multi-homing?

24       A     That publishers are multi-homing. Again, think back to  
25 what we've discussed in DFP, publishers are taking demand



1 from various sources, and it says most of them are not just  
2 using AdX, for example, they're using multiple exchanges.

3 Q Does this data capture all the exchanges used by DFP  
4 publishers?

5 A Not quite, no. It goes back to this issue with header  
6 bidding. So to the extent other exchanges are getting in  
7 through header bidding, the ordinary course DFP data can  
8 capture -- figure out who the exchange is in most of those  
9 cases but not all. So the multi-homing is probably slightly  
10 larger than is reflected here.

11 Q All right. Can we look at DTX 1868, which is in  
12 evidence, according to my notes.

13 A Okay.

14 Q It doesn't seem plausible this is in evidence.

15 MS. WOOD: It is.

16 THE COURT: It is.

17 MR. ISAACSON: Okay.

18 THE COURT: It's been a long trial.

19 MR. ISAACSON: Yes, I know.

20 BY MR. ISAACSON:

21 Q Google's share -- it's titled Google's Share Among Ad  
22 Exchanges for all U.S. Display Advertising, 2019 to 2022.

23 Yeah, I did put this into evidence.

24 The chart refers to Google's share amongst ad  
25 exchanges.

1                   How are you defining ad exchanges for this chart?

2     A     An ad exchange is any ad -- part -- any part of ad  
3     tech, any ad tech that runs an auction or facilitates a  
4     direct sale.

5     Q     So this includes social, retail, Amazon, apps,  
6     connected TV, the categories you've been talking about?

7     A     Yeah. Just like we said for ads have to be served,  
8     it's somewhere in the ad tech, it has to facilitate the  
9     auction or the direct sale.

10    Q     The notes say you include, though, AdX, AdSense, AdMob  
11    and YouTube and other O&O display.

12                   Would you explain that?

13    A     They fit that definition. They are all -- in order to  
14    facilitate the transaction, they are all either running  
15    auctions or facilitating direct sales.

16    Q     And what do these shares tell you about the issue of  
17    whether Google has monopoly power over exchanges?

18    A     It's similar to what we saw for the ad servers. This  
19    says that only -- if you take all the U.S. display spending  
20    in the country, only 17 percent runs through Google. And  
21    that includes not just AdX, but as we said, AdSense, AdMob  
22    and Google's O&O.

23                   So 83 percent of the display is being exchanged,  
24    being sold through a non-Google exchange. So that tells me  
25    Google is actually quite small once we consider all of these

1 options, along with the constraints I've talked about  
2 otherwise in terms of direct sales and all the other options  
3 that tells me -- that's inconsistent with Google having  
4 monopoly power.

5 Q Can we look at DTX 1949 from your report.

6 THE COURT: Any objection?

7 MR. TEITELBAUM: No objection.

8 THE COURT: It's in.

9 (Defense Exhibit Numbers 1949 and 1949A admitted into  
10 evidence.)

11 MR. ISAACSON: This is partially redacted to  
12 anonymize some companies. And I guess with each one of  
13 these, Your Honor, we'll have the --

14 THE COURT: The number and the A?

15 MR. ISAACSON: And the A, yes.

16 BY MR. ISAACSON:

17 Q Is this the same data, but it now identifies some of  
18 the companies having shares in a pie chart for the year  
19 2022?

20 A Yes.

21 Q Okay. To sum it up, what is your opinion about whether  
22 Google has monopoly power in a market for ad exchanges?

23 A I conclude, for the reasons I've given, that it does  
24 not.

25 Q Okay. Let's now talk about the advertiser ad network

1 market in Google Ads.

2 Did Professor Lee conduct a valid hypothetical  
3 monopolist test for his advertiser ad network market?

4 A No.

5 Q Why do you say that?

6 A In this case, the answer is slightly different. It's  
7 not just the same as the last two. For advertiser ad  
8 networks, he discussed some experiments that Google had run  
9 where Google experimented with possibly raising the price  
10 for Google Ads.

11 Q Is this the 2014 and 2018 experiments?

12 A That's right. And he indicated that those experiments  
13 said that Google could raise its price profitably. So he  
14 concluded that that meant that it satisfied the hypothetical  
15 monopolist or showed power. But what we know is Google --  
16 whatever those experiments said, Google didn't actually  
17 raise the price.

18 So I actually reached the opposite conclusion,  
19 which is if the experiment based just on Google Ads said  
20 Google could raise the price, but Google chose not to,  
21 something else constrained Google from thinking that was  
22 optimal. That other constraint that led Google to leave the  
23 price unchanged could be a two-sided concern, but in any  
24 case, it's the sort of thing I'm talking about that's left  
25 out when you look at these markets one by one.

1 Q Could we look at DTX 1889.

2 MR. TEITELBAUM: No objection.

3 THE COURT: All right. It's in.

4 (Defense Exhibit Number 1889 admitted into evidence.)

5 BY MR. ISAACSON:

6 Q Okay. This is a chart from your report, and over on  
7 the left it goes from 0 to 5 percent to 10 percent to  
8 15 percent to 20 percent and then charts Google Ad fee  
9 trends.

10 Can you explain what this chart is?

11 A Yeah. So these are from Google Ads data looking at the  
12 fees charged by Google Ads, as it says. These bounce around  
13 a lot because, I think as has been discussed, the Google Ads  
14 fees are sort of derived from each specific transaction. So  
15 it's not just one number, so it bounces around, and we see  
16 it sort of bouncing around above and below the 14 percent.

17 Q And we only have this data from about July of 2015; is  
18 that right?

19 A That's when the underlying Google Ads data starts.

20 Q All right. Can we look at PTX 1401.

21 THE COURT: P, as in plaintiff?

22 MR. ISAACSON: P, as in plaintiff.

23 THE COURT: 1401.

24 MR. TEITELBAUM: If it's not in, no objection,  
25 obviously.

1 THE COURT: All right. It's in.

2 (Plaintiff Exhibit Number 1401 admitted into evidence.)

3 BY MR. ISAACSON:

4 Q All right. Now, Professor Lee took -- the last one  
5 went in 5 percent increments, and Professor Lee what he's  
6 done here is, with the upper line, done this in 2 percent  
7 increments. It's the same data; is that right?

8 A Yeah. It's the same data. He also put DV360 on here.  
9 But leaving that to the side, it's just the same data. His  
10 chart just nicely has finer gradations.

11 Q Right. And I actually sort of like this chart better,  
12 which is why I'm showing it. Because of the 2 percent  
13 increments, it's easier to see some of the movements.

14 So what do we know about Google Ad prices from  
15 August 2015 through November '22?

16 A Again, as I've said, they've bounced up and down I  
17 think sort of around 14 percent. In recent times, they've  
18 maybe fallen somewhat below that, but certainly they have  
19 not gone up.

20 Q All right. So now let's go back to DTX 1977. So we've  
21 talked about various columns here. Now there's a column for  
22 Google Ads and starting at 14 percent and ending at  
23 13 percent.

24 Now, in the year 2014, you have 15 percent listed  
25 there. Did you have data for that?

1 A No.

2 Q So at the bottom of sources, the last line is a Bates  
3 stamp number, and it says for 2014 Google Ads fee.

4 That was your source for the 15 percent?

5 A Correct.

6 Q Okay. Now, did you know when this column was created  
7 that that document was an experiment?

8 A No. That's the experiment we were discussing. But at  
9 the time when I created this, I didn't realize that that  
10 price change was just the experiment. It makes sense now  
11 because it just blips up once and then is 14 everywhere  
12 around it, but I did not know that at the time.

13 MR. ISAACSON: And for the record, that was the  
14 experiment admitted at PTX 1808 that's that Bates number on  
15 the page.

16 THE COURT: All right.

17 BY MR. ISAACSON:

18 Q All right. The term advertiser --

19 MR. ISAACSON: You can take that down, Matt.

20 BY MR. ISAACSON:

21 Q What are advertiser ad networks?

22 A It's not a term that I generally use, but it's -- I  
23 guess I can say broadly it's an example of a buy-side tool.  
24 The plaintiffs have defined it as one example of a tool that  
25 advertisers use to buy ads.

1 Q Are there other buying tools that Professor Lee has  
2 excluded from his market of advertiser ad networks?

3 A Yeah. There's a broader set that he's defined, and  
4 generally I would refer to the set as DSPs, demand-side  
5 platforms.

6 Q And so DSPs are a type of buying tool excluded from his  
7 markets?

8 A Correct. I have often referred to all of them as DSPs,  
9 but in the distinction Professor Lee and plaintiffs are  
10 making, there's these advertiser ad networks, and then  
11 there's a broader class of DSPs.

12 Q All right. Can we look at DTX 1971 from your report.

13 THE COURT: Any objection?

14 MR. TEITELBAUM: No objection.

15 THE COURT: It's in.

16 (Defense Exhibit Number 1971 admitted into evidence.)

17 BY MR. ISAACSON:

18 Q And this table is titled Google Ads and DV360 Spending  
19 by Advertiser Side for 2022.

20 At the top for Google Ads, you'll see there is  
21 percentages over on the right. So, for example,  
22 95.7 percent spent more than \$10,000, and 80.9 percent spent  
23 more than \$500,000. That's in Google Ads. In DV360, spent  
24 more than 100,000, 98.9 percent, spent more than 500,000,  
25 96.9 percent.



1                   So where is this data drawn from?

2     A     Google Ads data and DV360 data.

3     Q     And what does this table show regarding the size of  
4     advertisers that are using Google Ads and DV360?

5     A     Just to be clear at the start, DV360 is certainly an  
6     example of a DSP left out of plaintiffs' market.

7                   This shows that in both cases for Google Ads and  
8     DV360, the vast majority of the dollars in revenue that they  
9     bring in -- the spend that they bring in is coming from very  
10    large advertisers.

11                  So although Google Ads has more small advertisers,  
12    if you look at the -- it's .1 -- it's one tenth of 1 percent  
13    of these advertisers are the ones that spend more than  
14    \$1 million, but they're accounting for three-quarters of the  
15    spending.

16    Q     So, to be clear, when the Court was shown information  
17    about Google Ads' advertisers who were only on Google Ads  
18    and not DV360, that wasn't the dollars being spent, that was  
19    just the number of advertisers?

20    A     That was the number of advertisers. I mean,  
21    ultimately, again, the money Google makes, which is what  
22    drives Google, is based on a percentage of the spend. And  
23    so the vast majority of that is coming from these very large  
24    advertisers.

25                  That matters to your question because I think to

1 recognize that very large advertisers also use DSPs, they're  
2 the ones who easily can use DSPs. And so, again, if you  
3 think about Google trying to raise the price or do  
4 something, you know, harmful to Google Ads, even if just the  
5 large advertisers could switch to a DSP, that would account  
6 for the vast, vast majority of the revenue, making it a  
7 large constraint on Google.

8 Q All right. Could we look at DTX 1970.

9 MR. TEITELBAUM: No objection.

10 THE COURT: All right. It's in.

11 (Defense Exhibit Number 1970 admitted into evidence.)

12 BY MR. ISAACSON:

13 Q Okay. This is AdX U.S. Spending Patterns for Selected  
14 Advertisers.

15 So over on the left, there's a list of advertisers  
16 and then columns for AdX spending via Google Ads, and then  
17 AdX spending via third-party buying tools, and then  
18 third-party buying tools with the largest increases.

19 So is this AdX data?

20 A It's using AdX data to see examples of advertisers who  
21 are spending money on Google Ads and also on third-party  
22 buying tools.

23 Q So just looking at the column percentage change, AdX  
24 spending via Google Ads.

25 A Yes.

1 Q And then the percentage change for the third-party  
2 buying -- third-party buying tools. Say that three times  
3 fast.

4 Would you explain what this shows?

5 A Again, these are examples, to be clear. These are  
6 selected examples, but just to show situations where, you  
7 know, buyers who are buying through AdX are -- between  
8 Year 1 and Year 2 are greatly reducing the amount they buy  
9 via Google Ads, and greatly increasing the amount that they  
10 buy through a third-party tool. So it appears from the data  
11 that these advertisers have substituted away from Google Ads  
12 and towards the third party.

13 And I would note that many -- most of these  
14 third-party tools are not in plaintiffs' market. I think  
15 Criteo is the one that is, but the rest of them would be  
16 DSPs not in the market.

17 Q All right. Could we look at DTX 1837.

18 MR. TEITELBAUM: No objection.

19 THE COURT: All right. It's in.

20 (Defense Exhibit Number 1837 admitted into evidence.)

21 BY MR. ISAACSON:

22 Q And this is titled Competition with Google Ads and  
23 Google Ad Manager Auction Data.

24 So now we're looking at competition within the  
25 auctions; is that right?

1 A Right. So I've prepared this to sort of look at a  
2 second type of competition. So there's competition between  
3 buy-side tools to get buyers, that's what we were doing.  
4 This is competition to win the auction.

5 Q And it says at least one-third party bidder 80 percent  
6 of the time at the top, and then there's lists for  
7 Authorized Buyers, open bidders and remnant.

8 What is this chart showing?

9 A So this is back to your favorite GAM log-level data.

10 Q Well, I would -- let's start with that. Okay.

11 This has GAM log-level data; is that correct?

12 A Yes. Yes.

13 Q Is that -- it's been noted that the information on the  
14 names of winning advertisers is not reliable in this data.

15 Is that a problem for this chart?

16 A No. It's the reason the chart is made the way it is.  
17 That's why the first line there just says remnant, EG header  
18 bidding, because you can tell for sure that it's a remnant,  
19 the log-level data will tell you that. What you can't tell  
20 for sure in the log-level data if header bidding won or what  
21 buyer won within header bidding.

22 Q All right.

23 A So bottom line, what this is telling me is that in  
24 80 percent of these auctions that Google Ads was in, it  
25 faced at least one other bidder. And in 67 percent of the

1 time, it faced a remnant, but I can't say for sure who that  
2 remnant was.

3 Q So what does this chart tell you about who Google Ads  
4 competes against within AdX auctions?

5 A Yeah. So, I mean, the part that's blacked out on here  
6 lists the names of specific buyers I can identify. And  
7 you'll see those are far beyond just Criteo. They are a  
8 large list of other exchanges, and, frankly, other buying  
9 tools. So Google Ads is competing with many other DSPs and  
10 even with other exchanges.

11 So, again, the implication is if Google Ads tries  
12 to raise its fee, two things happen. One, buyers themselves  
13 switch to DSPs, that's what we did before; and two, Google  
14 Ads is not going to bid as effectively. Its bids are going  
15 to be reduced, and so it's going to lose auctions, both to  
16 DSPs and to exchanges.

17 Q All right. While we're talking about bidding, what's  
18 your understanding of how bids are submitted to AdX? We've  
19 heard about CPM and CPCs.

20 A The actual bids that go into AdX are on a CPM basis,  
21 meaning all the bids are put in the cost per 1,000  
22 impressions.

23 Q So what happens if an advertiser at Google Ads is  
24 paying on a CPC basis, how is a bid made?

25 A Google Ads takes that bid within Google Ads, but it

1 still bids into the AdX auction on a CPM basis. So Google  
2 Ads has to do that conversion.

3 Q And for advertisers who want to pay on a CPC basis, do  
4 DSPs other than Google Ads offer that opportunity?

5 A Yes, in two ways. Some of them, like Amazon, just  
6 directly offer CPC bidding so you can bid per click. Many  
7 others offer what's called CPC optimization. A lot of  
8 bidding these days doesn't work where I go in and I bid on  
9 every auction on a certain price. In fact, most of it  
10 occurs where I tell the tool this is what I care about. I  
11 want to pay -- I want to keep my CPC down. And then the  
12 tool uses a lot of AI these days and figures out how to bid  
13 for you based on your objective. So if you care about CPC,  
14 almost every DSP these days, you just tell it I care about  
15 CPC and it figures out how to bid to minimize your CPC.

16 Frankly, the reason that happens is because these  
17 tools are better than individual bidders at really  
18 optimizing CPC.

19 Q Let's look at some numbers on that. DTX 1882.

20 MR. TEITELBAUM: No objection.

21 THE COURT: All right. It's in.

22 (Defense Exhibit Number 1882 admitted into evidence.)

23 BY MR. ISAACSON:

24 Q This is titled Google Ads Display Spending by Bidding  
25 Strategy, 2005 to 2022. There are bidding strategies here

1 at the top. The one that goes from the largest to the -- to  
2 probably the smallest is manual CPC or CPM. And then  
3 there's maximized conversion or conversion value, target CPA  
4 or return on ad spend and other.

5 So would you explain what these bidding strategies  
6 are in this chart?

7 A Yeah.

8 So this is Google Ads' data based on the  
9 strategies people are using to bid. Professor Lee made a  
10 point that something that makes Google Ads stand out is that  
11 you can bid CPC, and talking about how you can do that in  
12 other places. This makes the more general point I was just  
13 making, which is this notion of bidding manually on a CPC  
14 basis was something of a big deal ten years ago, but  
15 increasingly over time, people don't bid that way, they bid  
16 on -- they bid these optimized tools.

17 And so the one that says target CPA, CPA is cost  
18 per action. So now instead -- I don't really just care if  
19 people click, I care if they click and buy something from  
20 me. So you can tell the logger to try to minimize the cost  
21 I have to pay per auction, or, more generally, try to  
22 maximize my return. Return on ad spend is basically the  
23 same as return on investment.

24 So this whole idea that there's a difference  
25 between tools based on whether you can bid in CPC or CPM has

1 really gone away, because every tool has most of the buyers  
2 bidding on a let the machine figure out how to optimize the  
3 thing I care about.

4 Q All right. So for buying tools, let's look at  
5 multi-homing again. DTX 1902.

6 THE COURT: Any objection?

7 MR. TEITELBAUM: No objection.

8 THE COURT: It's in.

9 (Defense Exhibit Number 1902 admitted into evidence.)

10 BY MR. ISAACSON:

11 Q Now, this is advertiser multi-homing across buying  
12 tools on AdX in the year 2022. And you can see the number  
13 of advertiser are using one, two, three and four buying  
14 tools on AdX.

15 What does this chart tell you about multi-homing  
16 of buying tools?

17 A Again, it says most -- and this would actually be the  
18 advertiser spend that's -- it's the percentages of spend.  
19 But it would tell me that most of the spend is made up by  
20 buyers who are -- advertisers who are using multiple tools.  
21 So they're not just buying through just Google Ads, they're  
22 using a variety of tools.

23 And that's even true within AdX. Right. Another  
24 reason they might be using multiple tools is to bid into  
25 other exchanges. But even within AdX, they're using



1 multiple tools.

2 Q All right. The next exhibit is -- the content is under  
3 seal. DTX 1840.

4 THE COURT: Any objection to 1840?

5 MR. TEITELBAUM: Just one moment, Your Honor.

6 THE COURT: And, again, each time we have said  
7 where they're under seal, is there going to be an A version  
8 available for the public?

9 MR. ISAACSON: Yes. Yes. Yes. And I haven't  
10 been saying each one in the record.

11 THE COURT: We'll have to clear that up when we do  
12 administrative work in the end.

13 MR. ISAACSON: I'm hoping to have help on that.

14 MR. TEITELBAUM: No objection to 1840.

15 THE COURT: All right. It's in.

16 (Defense Exhibit Numbers 1840 and 1840A admitted into  
17 evidence.)

18 BY MR. ISAACSON:

19 Q And this is the U.S. spending by Microsoft Audience  
20 Network.

21 A I didn't go there. Which binder is that in?

22 MR. ISAACSON: You can put it on his screen and  
23 the Judge's screen.

24 THE WITNESS: Thank you.

25 BY MR. ISAACSON:

1 Q So is this an ad -- is this an ad network that  
2 Professor Lee excludes from his advertiser ad network?

3 A Yes.

4 Q Okay. And this is Microsoft?

5 A Right.

6 So Microsoft runs in, even by plaintiffs'  
7 definitions, an ad network basically just like Google Ads.  
8 They have -- you can buy their owned-and-operated stuff like  
9 Outlook ads. You can also buy on other sites. So it's  
10 basically exactly like Google Ads. Really, a replica of  
11 Google Ads they've been growing recently. But Professor Lee  
12 refers to all of that as native advertising and excludes it.

13 Q Does it make any sense to you to exclude Microsoft as a  
14 competitor to Google Ads?

15 A It really is the -- it's the same. Google Ads lets you  
16 buy Google O&O plus other display ads; Microsoft does the  
17 same thing. So I see no basis to exclude -- include one and  
18 exclude the other.

19 Q All right. Can we look at DTX 1839.

20 THE COURT: Any objection?

21 MR. TEITELBAUM: No objection.

22 THE COURT: All right. It's in.

23 (Defense Exhibit Number 1839 admitted into evidence.)

24 BY MR. ISAACSON:

25 Q This is Google Ads and DV360's share of U.S. indirect

1 open-web display advertising buyer tools.

2 What does this chart show?

3 A So this shows the combined Google share of spending via  
4 buying tools. So it's --

5 Q So you're not including just Google Ads who's in the  
6 plaintiffs' market, you've also included DV360, and those  
7 would be the two bars at the bottom, blue and pale yellow?

8 A Correct.

9 And so it uses all the third-party data to figure  
10 out spending by other buying tools, but it -- it figures out  
11 Google's -- the two Google buying tools share of the total.  
12 And you see the combined share has fallen over time, and  
13 today it's 40 percent, and Google Ads alone is 16 percent.

14 Q Right. And have you -- does the other capture -- it's  
15 based on data in this case. Does this capture all the  
16 buying tools that are out there?

17 A What's explicitly listed as the companies doesn't  
18 capture every other buying tool, although I have made  
19 adjustments in the data to account for the ones that are  
20 missing.

21 Q All right. Can we look at -- go back to your first  
22 binder, a business document, DTX 423.

23 MR. TEITELBAUM: No objection.

24 THE COURT: It's in.

25 (Defense Exhibit Number 423 admitted into evidence.)

1 BY MR. ISAACSON:

2 Q This is a Google document with an overview of Amazon,  
3 and at page 2 -- do I got the right number here? 423 at 2.

4 THE COURT: I'm sorry?

5 MR. ISAACSON: Yes.

6 BY MR. ISAACSON:

7 Q Amazon competitive -- under the initial meeting it says  
8 Amazon's competitive position in the display ad market has  
9 evolved, and it talks about the buy-side, and also later  
10 talks about the sell-side.

11 What does this document reflect regarding Google's  
12 perception as to whether Amazon proposed a competitive  
13 threat to the buy-side of its business?

14 A I mean, clearly it says that Google perceived such a  
15 competitive threat. And, again, as I mentioned, Amazon is  
16 another model similar to Google Ads in the sense that you  
17 can buy ads on Amazon, but you can also buy ads on  
18 third-party sites, and Google sees that buying tool from  
19 Amazon as a threat.

20 Q All right. Could we look at DTX 1860.

21 THE COURT: Any objection?

22 MR. TEITELBAUM: No objection.

23 THE COURT: All right. It's in.

24 (Defense Exhibit Number 1860 admitted into evidence.)

25 BY MR. ISAACSON:

1 Q So Google's share amongst advertiser buying tools for  
2 all U.S. display advertising is set forth here from 2019 to  
3 2022.

4 So this would include all the buying tools that  
5 you've described?

6 A Correct. I mean, this includes everything we've been  
7 talking about. This is another of these charts that looks  
8 at what percentage of total spend in EMARKETER -- because  
9 all of it uses some buying tool, what percentage of that  
10 spend runs through a Google buying tool.

11 Q Okay. And to sum up, what is your opinion about  
12 whether Google has monopoly power in a market for advertiser  
13 ad networks?

14 A First of all, I don't find that to be a valid market  
15 for all the reasons I've said, and specifically here because  
16 it leaves out things like DSPs.

17 And, secondly, given the low share that runs  
18 through Google buying tools and all of those competitors, I  
19 would conclude there's no way to say that Google has  
20 monopoly power here.

21 Q All right. Let's talk about another major topic.

22 Could you summarize your opinion about Google's  
23 conduct in this case and the effects it's had on  
24 competition?

25 A Sure.

1           There's been lots of detailed discussion about  
2 specific conduct, and we can talk about some. But I think  
3 one thing I have thought a lot about is to take a step back  
4 as a competition economist and think about whether the  
5 evidence on the whole supports that Google has harmed  
6 competition.

7           A lot of what I've been doing so far with shares  
8 and things speaks to that, but I also, you know, look at the  
9 overall metrics in the industry. Like, what's happened to  
10 output, to sales over time, and how have those grown  
11 relative to what people expected them to be, what's happened  
12 to prices, what's happened to the quality of the offerings  
13 and how well advertisers and publishers are doing.

14           When I look at all of those metrics, I see an  
15 industry that is thriving and succeeding and where firms are  
16 doing better over time. I don't see any evidence of a  
17 market that has been subject to the exercise of monopoly  
18 power or been harmed.

19 Q   All right. And when you looked at Professor Lee's  
20 analysis, did he define a but-for world -- what a but-for  
21 world would look like without the Google conduct in his  
22 relevant markets?

23 A   No. And that's important. I just -- I want to stress  
24 this. All those other metrics that I look at, I don't want  
25 to say that you can just look at them and that's

1 dispositive, you're done. The metrics all point to me as a  
2 very successful thriving market. It could be that  
3 plaintiffs could come forward and say, even though it looks  
4 so successful, we can show you a but-for world. Meaning but  
5 for Google's conduct, it would have done even better. That  
6 would be a way to show that there's harm even though the  
7 market looks like it's doing so well. But we haven't done  
8 that. I see a market that looks successful. You know, it  
9 seems like it would be a big task to try to show it would  
10 have been even more successful, and I haven't seen Professor  
11 Lee or plaintiffs even try to do that.

12 Q As an economist, is it your view that there are  
13 benefits to operating an integrated ad tech stack?

14 A Absolutely.

15 Q Would you explain?

16 A Yeah. I mean, I think we see that in the growth of the  
17 firms that are operating fully integrated stacks like  
18 Facebook and Amazon and TikTok, more integrated than Google,  
19 for sure, in the sense that they're entirely integrated.

20 I would point to three economic benefits of that  
21 sort of integration of having the -- you know, the full  
22 path, the full stack.

23 One is economics teaches that that tends to lead  
24 to lower pricing across the stack. The reason is if you  
25 have multiple firms along the stack, each one has sort of

1 taken their bite of the apple, each one adds some profit  
2 margin to the picture. It leads to what economists call  
3 double marginalization. Just lots of different firms adding  
4 a profit margin, whereas economics has shown that if it's  
5 one firm, it sort of meets one profit margin, it thinks  
6 about the effect of the full stack, prices tend to be lower.  
7 So one is lower prices from integration.

8 Two, I would say it generally helps firms have  
9 more incentive to invest. A problem with investing in  
10 better products in an industry like this is it's hard to  
11 say -- if I invest in something that's good for the  
12 buy-side, a lot of the benefit goes to the sell-side. So  
13 it's -- if I'm not on both sides, I can't really capture the  
14 return on my investment, so there's less incentive to  
15 invest, but the integrated firm can solve that.

16 And then third, it's just easier often to work  
17 within one firm. If you want to develop a product that  
18 works together and makes these matches well, you don't have  
19 to contract with third parties, you can do it all in-house.  
20 That tends to work more efficiently.

21 Q Have you seen evidence of the benefits of integration  
22 are present in this case?

23 A Yeah. It's what -- I mentioned, you know, how well --  
24 I mean, again, Facebook and Amazon and these guys are fully  
25 integrated, they do everything as one stack. Google is



1 integrated, it has the different pieces, but it also works  
2 with third parties. The success stories we've seen have  
3 been the integrated guys. So that's one piece.

4 And then two, just generally what I see and the  
5 evidence on output and pricing and investments and so on all  
6 supports the benefits that I would expect from integration.

7 Q You mentioned several firms that are operating in an  
8 integrated ad tech stack.

9 Is Microsoft also operating in an integrated ad  
10 tech stack?

11 A Yes.

12 Q Did you prepare a demonstrative based on your report to  
13 show the evolution of Microsoft's ad tech stack?

14 A Yes.

15 MR. ISAACSON: Can we look at Israel Demonstrative  
16 1. All right.

17 BY MR. ISAACSON:

18 Q Would you explain the evolution of Microsoft moving  
19 towards its integrated ad tech stack?

20 A Sure. I mean, I can do it quickly. The first --

21 Q Quickly is always appreciated.

22 A From 2006 on, you see Microsoft putting together its  
23 first-party offerings, like its search offerings and so on  
24 and making deals to run to manage a display ads business.  
25 It added LinkedIn in 2016, so it has a social piece.

1           2018 is a really important step on there, that's  
2 where it launched the Microsoft Audience Network, which is,  
3 again, the buy-side tool I talked about, which is much like  
4 Google Ads.

5           And then in -- just jump forward to 2022, it  
6 acquired Xandr. I think it's been discussed in trial.  
7 Xandr is a firm that has ad tech throughout the stack. So  
8 Microsoft is now in the position of having first  
9 owned-and-operated properties, a buying tool, and a full ad  
10 stack very similar to Google.

11 Q     All right. Can we look at DTX 1881.

12           THE COURT: Any objection?

13           MR. TEITELBAUM: No objection.

14           THE COURT: All right. It's in.

15           (Defense Exhibit Number 1881 admitted into evidence.)

16 BY MR. ISAACSON:

17 Q     This is Google Display Engineering Expenditures, 2017  
18 through 2022.

19           What is this chart showing?

20 A     Showing the money that Google has invested in  
21 engineering expenditures, you know, on the ad tech business.  
22 So we see those expenditures are over \$1 billion a year and  
23 growing.

24 Q     And it says all the expenses that Google has put into  
25 its work on innovating in the Google display space?

1 A No. This is what you can capture from this engineering  
2 line item, which I understand to primarily be paying for  
3 engineers. So a lot of it is just the salaries of  
4 engineers. There are other expenditures like on the servers  
5 themselves, the computer hardware that is not covered here.

6 Q All right. Can we look at DTX 1827.

7 MR. TEITELBAUM: No objection.

8 THE COURT: All right. 1827 is in.

9 (Defense Exhibit Number 1827 admitted into evidence.)

10 BY MR. ISAACSON:

11 Q All right. This is Google Display Ads Privacy and  
12 Safety Engineering Expenditures. So, again, this is  
13 engineering.

14 Would you explain what this chart shows?

15 A Again, Google's annual expenditures, but here it's on  
16 ad privacy and safety. So dealing with issues about, you  
17 know, unsafe or other ads that, you know, wouldn't be good  
18 for the ecosystem. And this shows that -- that expenditure  
19 36 million in the beginning and growing dramatically.

20 Q And you mentioned the benefits of how your products  
21 could work with integration.

22 What are the benefits for security and brand  
23 safety of integrated ad tech tools?

24 A The way I think about it, if you're on both sides of  
25 the market, it gives you, on both sides, both the ability

1 and incentive to deal with these issues. So if I work with  
2 publishers, I have the ability to work with those publishers  
3 to monitor what sort of content they have and what their  
4 sites are and to make sure it is what it says it is. I have  
5 the incentive to do that because advertisers want to be sure  
6 that's true.

7 Q All right. Let's look at --

8 A And vice versa. Sorry.

9 On the other side, you can work with advertisers  
10 to help publishers. So by being on both sides, you can work  
11 with both sides to help both sides.

12 Q Thank you.

13 Can we look at DTX 1895.

14 MR. TEITELBAUM: No objection.

15 THE COURT: All right. It's in.

16 (Defense Exhibit Number 1895 admitted into evidence.)

17 BY MR. ISAACSON:

18 Q This is United States Average AdX Publisher RPM, 2014  
19 to 2022.

20 This is AdX data; is that right?

21 A That's correct.

22 Q And it's -- there's a line for unadjusted and a line  
23 for seasonality adjusted.

24 Would you explain what this chart shows?

25 A It just shows that the RPM, meaning the revenue per

1 mille, basically the revenue that publishers are getting  
2 from AdX. So the payouts to publishers per 1,000  
3 impressions are going up. Seasonally adjusted just smoothes  
4 it out some to deal with seasonality. But basically over  
5 time, even adjusting for inflation, publishers are doing  
6 better over time working with AdX.

7 Q All right. I think we saw a discussion earlier about  
8 how things were going up in 2021 because of COVID until they  
9 initially went down because of COVID.

10 But as a whole, it's gone up from 1.5 -- from  
11 around 1.5 to around 2; right?

12 A Clearly it bounces around, as I've said. But, yeah,  
13 the little dash line there is like fitting what's called a  
14 regression line. That's the average improvement over time.

15 So on the whole this is a measure of the quality I  
16 talked about earlier, one indicator of things working well,  
17 publishers are making more and more money when they work  
18 with AdX.

19 Q All right. Let's look at DTX 1896.

20 MR. TEITELBAUM: No objection.

21 THE COURT: All right. It's in.

22 (Defense Exhibit Number 1896 admitted into evidence.)

23 BY MR. ISAACSON:

24 Q This is again Google Ads' data. It says U.S. Average  
25 Google Ads Advertiser CTR, Click-Through Rate from

1 January 2012 to December '22.

2 What does this chart tell us?

3 A Again, click-through rate for ads placed by Google Ads'  
4 advertisers. So the click-through rate means I bid on and  
5 place an ad on an impression, what's the percentage of the  
6 time that the person clicks on it. It's a pretty standard  
7 industry metric of quality, particularly quality for ad  
8 tech, like how good is the match that you're making, did you  
9 put the right ad in the right place. If so, people should  
10 be more apt to click on that ad. And we see that going up  
11 pretty dramatically over time.

12 Q Dramatically means it's gone up five times over the  
13 last ten years; is that right?

14 A Yes.

15 Q All right. DTX 1897.

16 MR. TEITELBAUM: No objection.

17 THE COURT: All right. It's in.

18 (Defense Exhibit Number 1897 admitted into evidence.)

19 BY MR. ISAACSON:

20 Q Now we're looking over at the last -- this ten-year  
21 period. U.S. Average Google Ads Advertiser CPC or  
22 Cost-Per-Click.

23 And that number is going down. Would you explain  
24 that?

25 A Again, Google Ads' data, just measuring how much

1 advertisers are paying for each click they get. We've  
2 talked about CPC before. So there's a pretty dramatic  
3 decline over time in what advertisers are paying per click.

4 Q All right. Let's talk about those last three charts  
5 together.

6 If the revenue for publishers is going up, the  
7 click-through rates for advertisers are going up, and the  
8 cost-per-clicks for advertisers are going down.

9 What does that tell you about the quality of these  
10 products over time?

11 A It tells me Google Ad tech products in particular are  
12 working very well. Right.

13 To say that one more time, you have a situation  
14 where publishers who work with AdX are making more per  
15 impression, advertisers who work with Google Ads are paying  
16 less per click. So advertisers are paying less for the  
17 click, but publishers are getting more per impression. The  
18 only way that can happen is if you have a good product and  
19 the click-through rate's going up.

20 Q And we've looked at some pricing data so far, and we're  
21 going to look at some more.

22 Has that data been adjusted for these quality  
23 changes?

24 A No. I mean, if you're just looking at the underlying  
25 prices of the tools, they're just the price of the tool.

1 They don't reflect the fact that the tool is getting better.

2 Q All right. Can we look at DTX 1828.

3 MR. TEITELBAUM: No objection.

4 MS. WOOD: It's already in.

5 MR. ISAACSON: Yeah. Well, maybe it is in. I got  
6 a different note. But I thought it was in.

7 MS. WOOD: It is in.

8 MR. ISAACSON: I agree with you.

9 THE COURT: It is certainly in now. All right.

10 (Defense Exhibit Number 1828 admitted into evidence.)

11 BY MR. ISAACSON:

12 Q This is U.S. display ad spending in billions.

13 So back in 2018, it's under 20 billion, and by  
14 2022, it's 120 billion. Eighteen times higher.

15 This is EMARKETER data?

16 A Yes.

17 Q Okay. And what does this tell you about the health of  
18 this industry?

19 A I mean, as I mentioned earlier, this kind of explosion  
20 and output is an indicator -- you know, a first indicator to  
21 me of a very healthy industry. It's -- you know, a lot of  
22 this has been created from scratch by this very complicated  
23 ad tech business that has to make all of this work, and it's  
24 working very well.

25 As I said before and I want to be clear, it's



1 possible that somebody could come in and say, look, this  
2 should be higher. But my view is this is a sign of a  
3 healthy industry, and to show harm, you have to show that it  
4 should have been higher. I haven't seen any evidence to  
5 suggest that it should have done even better than this.

6 Q It's also said there were other trends are going on,  
7 like people using more apps and more Internet and more  
8 e-commerce.

9 How does that fit into your analysis when you're  
10 looking into this chart?

11 A I mean, that's certainly true, and so that's why I  
12 don't want to say this proves the case by itself. It just  
13 is indicating that the pieces of the industry are working  
14 well.

15 I would say that those apps and those -- and that  
16 content and all that's out there is heavily funded by  
17 advertising, and so the fact that the ad tech business is  
18 working well and helping to fund those businesses is, again,  
19 consistent with a healthy industry.

20 Q All right. Could we look at DTX 1884.

21 THE COURT: Any objection?

22 MR. TEITELBAUM: No objection.

23 THE COURT: All right. It's in.

24 (Defense Exhibit Number 1884 admitted into evidence.)

25 BY MR. ISAACSON:

1 Q This is the same blue line, but underneath it there are  
2 projections from December 2009, August 2013, September 2017  
3 and September 2019.

4 Are those EMARKETER projections?

5 A Right. EMARKETER and its regular industry publication  
6 periodically posts its projection at a point in time of what  
7 it thinks will happen to display ad spending.

8 Q So what is this chart showing?

9 A Showing that not only has output been going up  
10 dramatically, it's consistently beaten the projections.

11 So, for me, that helps to take another step to say  
12 this industry really seems to be healthy. Right. The  
13 allegations in the case are that during these time periods,  
14 various things like Unified Pricing Rules or last look were  
15 launched at various points in time or continued to happen  
16 for other stuff.

17 I would look to see if that's true, and they've  
18 been hindering the industry, monopolizing the industry. I  
19 would expect to see output fall below what people expect.  
20 If something -- Google did something that hindered the  
21 industry, I would expect to see output fall below  
22 projections. But output has consistently been above  
23 projections. So, again, not the entire case, but a very  
24 strong indicator to me of an industry that is working well  
25 and beating what people expected.

1 Q All right. So we've looked at the level of prices in  
2 this case before. I want to look at some comparisons. So  
3 let's look at DTX 1892.

4 MR. TEITELBAUM: No objection.

5 THE COURT: All right. 1892 is in.

6 (Defense Exhibit Number 1892 admitted into evidence.)

7 BY MR. ISAACSON:

8 Q And this has anonymized company names.

9 This is a comparison of ad exchange average fees  
10 in 2020 through 2022.

11 Would you explain what this chart is showing?

12 A Comparing that AdX price that we looked at earlier to a  
13 variety of other companies.

14 Q And what is the data for this chart?

15 A I mean, it's AdX -- it's AdX data plus data --  
16 third-party data from the other companies on their prices.

17 Q And what does this chart show with respect to Google's  
18 ad exchange fees?

19 A AdX is in the middle of the distribution. Some are  
20 higher, some are lower. I know there's been a lot of  
21 discussion about where it sits relative to average and  
22 everything.

23 What I would take from it is in no way is AdX at  
24 the top. There are firms above it and firms below it.

25 Q All right. Advertiser ad networks, we created a --

1 your chart on prices was kind of big, so we created a  
2 smaller chart, Israel Demonstrative 2, which is a  
3 subcategory of DTX 1894.

4 Now, in Professor Lee's advertiser ad network, how  
5 much competitors does he say that Google Ads currently has?

6 A He only counts one.

7 Q Okay. And so we're not going to talk about that  
8 competitor by name, but we did compare -- did you do a  
9 comparison of prices between --

10 A Yes.

11 Q -- that competitor and Google Ads?

12 A Yes. And it's on the page here.

13 Q Right. And what does that show you?

14 A Google Ads is substantially less expensive than the  
15 competitor.

16 Q Okay. I think you've said that the -- does the market  
17 definition of an advertiser ad network that only has two  
18 competitors, does that make sense to you?

19 A No, it doesn't reflect the -- all the competition in  
20 the industry to get buyers and win auctions across all these  
21 different buying tools.

22 Q All right. So regardless of our desire to claim  
23 Google's the discount company, we're going to show you the  
24 prices of the buying tools.

25 DTX 1891.

1 THE COURT: 1891?

2 MR. ISAACSON: Yes.

3 THE COURT: Any objection?

4 MR. TEITELBAUM: No, Your Honor.

5 THE COURT: All right. It's in.

6 (Defense Exhibit Number 1891 admitted into evidence.)

7 BY MR. ISAACSON:

8 Q Now, this is similar to the exchange chart. This is  
9 three years, 2020 through 2022.

10 Are these other companies here buying tools?

11 A Yes.

12 Q Okay. And what does this chart show about Google Ads'  
13 prices and DV360 prices?

14 A DV360 is at the bottom of the distribution. I think  
15 DV360 is a low-priced firm of buying tools, and Google Ads  
16 is also toward the bottom. Google Ads is relatively  
17 inexpensive.

18 Q All right. Can we look at DTX 1893, which is another  
19 redacted exhibit.

20 THE COURT: All right. It's in. Is it in?

21 MR. TEITELBAUM: No objection.

22 THE COURT: Okay. It's in.

23 (Defense Exhibit Numbers 1893 and 1893A admitted into  
24 evidence.)

25 MR. ISAACSON: Can you scroll to the top, Matt.

1 This has a lot of company combinations. Just keep scrolling  
2 down, Matt.

3 BY MR. ISAACSON:

4 Q All right. So what are these company combinations?

5 A They're different combinations of buy-side tools and  
6 exchanges, and it looks at what the combined price for if  
7 you -- when you add up the buy-side tool in the exchange,  
8 what that combined price is.

9 So basically it's measuring -- again, I talk about  
10 paths. So you think about the price of a path to get from  
11 an advertiser all the way over to the ad server. This is  
12 that combined price.

13 Q So when you're looking at that combined price, where  
14 does Google Ads and AdX sit?

15 A So this -- again, the path that would follow you use  
16 Google Ads as your buy-side tool, and then Google Ads buys  
17 from AdX. So that's a path that Google -- an internal  
18 integrated path at Google is one of the lowest priced.

19 Q And how does this relate to your opinions about whether  
20 there are benefits to Google having an integrated ad tech  
21 stack?

22 A As I said, economics predicts that when you're  
23 integrated, your prices tend to be lower, you avoid these  
24 double margins. So by having Google Ads run through AdX,  
25 that shows that competitive benefit. Google Ads and AdX

1 combination has created one of the lower priced paths in the  
2 industry.

3 And, again, just to stress, to me what matters is  
4 competition for paths, and Google has created a very low  
5 priced path.

6 Q All right. Can we look at DTX 1977.

7 THE COURT: Any objection to 1977?

8 MR. TEITELBAUM: If it's not already in, no  
9 objection.

10 MR. ISAACSON: No, I'm sorry. It is in. This is  
11 the one I'm finishing up now.

12 BY MR. ISAACSON:

13 Q We've gone through the various columns here. The last  
14 column is the total when you take them all together and  
15 applying that to a \$2 CPM impression.

16 What is the price -- what are the prices you see  
17 from 2009 to 2022 of the total cost of DFP, AdX and Google  
18 Ads?

19 A Well, they're in the range of 30 percent or just a bit  
20 above. They started at sort of 33 and 34 and have fallen  
21 mostly to 31 or 32 or 33.

22 And again, to stress, you said this, but this is a  
23 full path. Now, this is from advertiser to impression.  
24 Right. So it's what -- if you go through Google, what do  
25 you have to pay for Google Ads, AdX plus DFP, and you get

1 something just over 30 percent.

2 Q All right. Let's look at DTX 1886.

3 MR. TEITELBAUM: No objection.

4 THE COURT: All right. It's in.

5 (Defense Exhibit Number 1886 admitted into evidence.)

6 BY MR. ISAACSON:

7 Q This is EMARKETER data now.

8 Can you explain this chart to the Court? It says  
9 ad tech fees as a percentage of ad spending, 2014 to 2022.

10 A So it is what it says. I wanted to find an industry  
11 source that had sort of an all-in estimate of what these ad  
12 tech fees add up to.

13 So EMARKETER is saying that on average across the  
14 industry, when you think of what ad tech takes out of every  
15 dollar, the industry average is today about 42 percent  
16 fallen from 46 percent.

17 Q All right. And that's compared to the 31 to 33 percent  
18 that we just saw from Google; right?

19 A Correct. So the Google number takes just over 30 cents  
20 on the dollar. EMARKETER's estimate that comes from  
21 EMARKETER directly is industry-wide. That number is a bit  
22 over 40 cents on the dollar. So Google is substantially  
23 below that EMARKETER industry estimate.

24 Q And what does it say about the health of this industry  
25 that the industry number is coming down from 45.8 percent to



1 42.3 percent and, at the same time, Google's total take rate  
2 is lower?

3 A Again, to me, that's another indicator of healthy  
4 competition. I mean, I probably take the most from Google's  
5 number being lower. To me, it's just a critical fact in the  
6 case is that via its integrated paths, Google has created  
7 some of the cheapest ways for advertisers to get to  
8 impressions. But the fact that the overall industry is  
9 falling is another indicator.

10 MR. ISAACSON: All right. I'm about to move to a  
11 new topic, Your Honor.

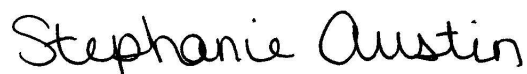
12 THE COURT: And you're looking at your watch, and  
13 you want to go to lunch.

14 MR. ISAACSON: Well, I don't want to go halfway  
15 through the topic.

16 THE COURT: That's fine. All right. I think.  
17 we'll just recess. And I'm going to give everybody an  
18 extra five minutes, so we'll start back up at 2:00.

19 (Court recessed for lunch at 12:57 p.m.)

20 -----  
21 I certify that the foregoing is a true and accurate  
22 transcription of my stenographic notes.

23  
24 

25 Stephanie M. Austin, RPR, CRR